

Indo-European Origins
of the Celtic Verb

I. THE SIGMATIC AORIST

By

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TO MY FATHER

teora eochraig aroslicet imráitíu :
mescae, tairisiu, sere.

PREFATORY NOTE

Syllabic liquids and nasals, as in Sanscrit or reconstructed Indo-European, have been marked by the subscript point rather than the subscript circle. Likewise for typographical convenience, the diacritic under Hittite *h* has been omitted.

Symbols and abbreviations are those current in linguistic literature. Note in particular,

> = 'is replaced by (as a result of a regular, purely phonological transformation)'

→ = 'is replaced by (as a result of a morphological or morphophonemic transformation)'

∅ = zero ending.

I follow Kuryłowicz, *Apophonie*, in describing Indo-European and Celtic root structures in terms of

T = any stop or fricative

E = any vowel (but, e.g., *e* = the vowel *e*)

R = any resonant,

to which is added

H = any laryngeal.

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Prolegomena

§ 1. REMARKS ON RECONSTRUCTION AND HISTORICAL LINGUISTIC METHOD.

THE etymological groundwork in the Celtic languages has already been done ; the laws of phonological correspondences between Indo-European and the several Celtic languages can be stated with a high degree of precision, indeed a fair measure of historical certainty. Yet a brief inspection of the relevant portions of the classical works of Thurneysen, Pedersen, or Lewis-Pedersen is sufficient to convince one that the historical morphology of the Celtic languages remains strikingly obscure ; with the exception of the nominal declension, the inflexional categories have never been systematically accounted for in comparative Celtic grammar. Nowhere is this more apparent than in the verb. This formal obscurity, coupled with certain peculiar syntactical traits of the Celtic verb, have led certain scholars, such as J. Pokorny, E. Lewy, H. Hartmann, and H. Wagner, to a variety of hypotheses of the presence of sundry ill-defined non-Indo-European substrata in Celtic, particularly on the shadowy elfin-populated Emerald Isle.

Without sure knowledge of the presence of such substrate populations, and without any notion of the nature of the languages they might have spoken, such a line of speculation is otiose : it is merely a displacement of the problem, a substitution of one unknown for another. If, however, by the utilization of more recent techniques of linguistic analysis, we can account for the peculiar development of the Celtic verbal system, as a direct and unmediated successor of the Indo-European verbal system, then the necessity for recourse to such hypothetical substrata simply disappears. It will be the primary objective of this study to show, by the

utilization of the techniques of functional analysis and internal reconstruction as well as the comparative method, how three formally and functionally disparate categories in the Old Irish and Early Welsh verb, the *s*-subjunctive, *t*-preterite, and *s*-preterite, are derived from a single unitary formation, a 'cornerstone' of the Common Celtic verbal system, and a formation which in Common Celtic is a direct lineal descendant of the sigmatic aorist of late Indo-European.

Historical and comparative linguistics has had in the past a tendency to concentrate its attention on linguistic origins, and not on linguistic development. But the Irish preterite is an excellent example of the principle that the forms of a linguistic system at a given time can frequently be explained historically only by concentrating attention on the process of development, and not simply by framing a hypothesis about the origin alone. Such a hypothesis, the Indo-European original, has been tried in the Celtic verb ; but the technique of equating a reconstructed Indo-European form with an attested Celtic form simply does not work in a large percentage of the cases. Isolated comparisons between two languages are treacherous in historical linguistics. Even where they are correct, if the structural contexts of the forms compared are not themselves comparable, we know in essence no more about the history of the languages than before, namely, that they are cognate. The situation is that of a root etymology ; in historical linguistics it is of value only as a starting point.

Indo-European linguistics in the nineteenth and much of the twentieth centuries, while it made fantastic inroads into the unknown, did so in essence by continuous refinement of the hypothetical original, Proto-Indo-European itself. Building inevitably on the more secure elements of the intellectual edifice created by our predecessors, we are in a position now to study the dynamic aspects of the process of linguistic development, and frame hypotheses about them. By this method we can elucidate aspects of the history of a given language which had previously remained obscure,

when seen only in the light of static comparison. It is to be expected that such investigations cannot but alter our conception of the original itself.

A problem in historical linguistics to-day presents two aspects: on the one hand the establishment, by the techniques of the comparative method, of an arbitrary initial stage of the phenomenon, and on the other hand a reconstruction of the historical processes whereby this original system was more or less eliminated, transformed, or restructured in the form in which it may appear in the different systems of the historical languages. Either of these two aspects of the historical problem may predominate in a given analysis. But in a case such as the problem before us of the Celtic verb, where the late Indo-European prototype—the classical form of the sigmatic aorist—can be established without much difficulty and with a fair degree of certainty, it is the second aspect, the establishment and reconstruction of dynamic historical processes, and their workings through the successive stages of the given language, which assumes primary importance. The problem may be said to be one of linguistic history, far more than of linguistic comparison; methodologically, the tools are frequently less those of the comparative method than those of internal reconstruction.

We are accustomed to consider language as a cohesive system, *un système où tout se tient*, functioning in a temporal continuum. Hence historical description and analysis must be founded on the notion of linguistic history as a sequence of successive linguistic systems. Such a view permits us to come closer to an understanding of the totality of the language in its historical development, than does the centering of attention on individual forms alone, in other words, atomistic etymological speculation. Formal and functional categories in language change, develop, and disappear at a slower rate than the individual forms which comprise them at any given moment. For this reason they have been recognized as a surer guide in the reconstruction of linguistic history than the manipulation of isolated lexical forms. Conversely, the inherent plausibility of

individual comparisons or reconstructions—Meillet's criterion of an etymology, and still as close as linguistics can usually come to proof or verification—is considerably strengthened if it can be shown that an individual reconstruction either enters a previously determined formal class, or constitutes with other reconstructions a new and distinct formal class. In this account of the Indo-European origins of certain aspects of the Celtic verb, we shall consider as the focus of attention the grammatical categories themselves, in both formal and functional terms. The individual forms which comprise them are of secondary concern, except insofar as they fall into distinct formal groups according to their root structure, with distinct morphological consequences.

In practice, the first step in historical analysis is usually the framing of a hypothesis of the origin of the given category: in the particular problem with which this study deals, that hypothesis is the late Indo-European sigmatic aorist. The second step is the verification of the hypothesis. Reconstructing back from the attested Irish forms, can we arrive at our hypothetical original? In the case of the Irish verb, the answer is quite simply no; and this is the impasse at which traditional Celtic comparative grammar was forced to remain. But reconstructing back to proximate forms is not the only technique of reconstruction, nor of historical linguistic analysis. In this case, as in many others in historical grammar, the solution lies not in simple lineal reconstruction, but in recovering the workings of the prehistoric morphological transformations which have reshaped the formal and functional alignment of the category in question.

Even this aspect, the attention to dynamic historical process, does not exhaust the possible techniques of reconstruction. Lineal reconstructions of linguistic prototypes tend to run backwards in time; the symbol < is more common than >. Insofar as we regard our asterisked forms only as symbols of phonological equations among attested forms, it cannot be otherwise. But Indo-Europeanists, like

phonemicists, may fall either into the 'hocus-pocus' camp, or into the 'God's truth' camp. Let us make the larger assumption, namely, that our asterisked forms try to correspond, on whatever level and however approximately, with a preexisting linguistic reality. Then an asterisked form, or a sequence of asterisked forms, becomes not an isolated symbol, but an entire model of a temporal sequence of systematic linguistic transformations leading to an attested form. Once this is admitted, then it is apparent that the simple exercise of reconstructing forwards in time may prove a fruitful and productive line of speculation.

In reconstruction we must deal both with forms and with functions. To reconstruct forms alone, without attention to their functional position, is first and foremost to create a hopelessly unrealistic linguistic situation. It is dangerous as well; for the functional analysis of two reconstructed forms may reveal them as incompatible in a given reconstructed linguistic system at a given time. We shall have occasion in this work to examine how the functional position of a particular form in a given structure can have a profound influence on the subsequent development of that structure, particularly in the case of the third person singular of a finite verbal paradigm; conversely, there are frequent cases where the adventitious identification of a phonological feature of one form with the morphological mark of another class results in a realignment of the function of the first form. An example in Celtic would be the occasional shift of $\bar{a}$ -subjunctive (of *e/o*-present indicative) to weak denominative $\bar{a}$ -present, with loss of the subjunctive function, and significantly the simple disappearance of the original *e/o*-present and the entire finite paradigm dependent upon it.

C. S. Stang has emphasized, in the first chapter of *Das slavische und baltische Verbum* (Oslo, 1942), that in the studies of each separate language group within Indo-European one must seek to ascertain what existing or preexisting functional oppositions may legitimately be set up in that language. His remarks have the great merit of being the first to insist that divergent formal characteristics

imply the previous existence in that language of definite functional oppositions which may have been in the meantime given up. We may illustrate this with a structurally significant feature of Old Irish (vestigially preserved in Early Welsh): the distinction between absolute and conjunct endings. Their distribution is automatic: when preceded by a preverbal particle, finite verbs have the conjunct endings; when not preceded by such a particle, they have absolute endings. The origin of the forms, seen clearly in the third person, the basic member of the paradigm, is the Indo-European primary/secondary endings: *berid* 'he bears' < **bher-eti*, *ní-beir* 'he does not bear' < **bheret*; *berait* 'they bear' < **bher-onti*, *ní-berat* 'they do not bear' < **bher-ont*. The consequences of this situation for historical purposes are manifold. In the first place, since the conjunct form of the Old Irish present with historically secondary endings corresponds to the Indo-European imperfect, it is not legitimate to attempt to explain the Old Irish imperfect by the Indo-European imperfect, as some have done, e.g., Thurneysen, *OIGr.* 372. As we shall see in more detail in § 10, the Old Irish imperfect represents the creation of a new opposition of secondary endings in the functional place of the secondary endings in classical Indo-European. Of greater structural significance, however, is the immediate conclusion to be drawn from these present forms: that the Indo-European opposition of primary/secondary endings was not utilized as a tense marker in Celtic. Hence when we observe the exact same distribution of absolute/conjunct flexion in the preterite as well as the present and the future, we are not justified in expecting the Celtic imperfect or the Celtic preterite to have ever been characterized by Indo-European secondary endings alone. The formal mark of the preterite must be sought elsewhere. It is this sort of aprioristic comparative reasoning which succeeded in masking even to as sensitive an observer as Thurneysen the fundamental fact that the desinences of the present indicative, subjunctive, *s*-preterite, and *t*-preterite (except in the plural) are identical; the variation is

in the morph preceding the desinence. In some cases the morph partially fused with the desinence, e.g., 3 sg. *-s-ti/-s-t* > *-ssi/-ss*; in this case there was constituted a zero ending, i.e., absolute *-ss-i/conjunct -ss-ø*, with very significant formal repercussions on the rest of the paradigm. But this cannot mask the original identity.

The present work has two parts; the first is concerned with the sigmatic aorist in Indo-European, and the second with the reflexes of this formation in Celtic. Both parts take as their formal point of departure the 'classical' *s*-aorist of late Indo-European, as traditionally reconstructed on the basis of Indo-Iranian in particular: full or lengthened grade root plus suffix *-s-* plus athematic secondary endings.

Part One will be concerned with the origins, in anterior stages of Indo-European itself, of the sigmatic aorist in its 'classical' form, and the morphological transformations which brought about the creation of this category in one dialect area of Indo-European. Both the initial stages of this historical process and the end result, the *s*-aorist as traditionally known, lie within Indo-European itself, and can be reached only by the techniques of reconstruction, not by direct attestation. For this reason it is inevitable that Part One will be the more hypothetical and conjectural in nature.

In Part Two the relations are otherwise. The point of departure is the classical sigmatic aorist, the only formal difference being the admission of both primary and secondary endings, as discussed above. But in this case instead of working backwards in time, to earlier linguistic stages, we shall be working—and reconstructing—forwards in time, down through Common Celtic to the palpable attested forms of Early Irish and Welsh. In Old Irish (and vestigially in Early Welsh) we have the previously mentioned three unrelated verbal categories: *s*-subjunctive, *t*-preterite, and *s*-preterite. Our objective here is to demonstrate, as rigorously, exactly, and unequivocally as is possible, how these three verbal categories do, in fact, go back to a sigmatic

aorist formation. In particular thereby we will be concerned with elucidating the historical linguistic processes whereby the familiar, 'classical' elements of the Indo-European verb were largely transformed, restructured, and redistributed to form the basic framework of the new, emergent Celtic verbal system.

The two appendices treat certain characteristic reflexes of laryngeal in Celtic, which I term morphological, since their historical development cannot be accounted for by lineal phonological reconstruction alone. The first of these is concerned with the development and expansion of certain suffix forms, which are identical in type with Sanskrit set forms, and admit of the same explanation as these. The second appendix deals with the historical analysis of a small group of Old Irish primary *a*-verbs, which reflect Indo-European athematic laryngeal presents. The nature of the particular historical problem, and the solution there presented, may be viewed as a microcosm of the technique and methodology of historical linguistic analysis which I am here advocating. If this solution is accepted, then the efficacy of that technique must be considered proved.

PART ONE

Indo-European

Le terme indo-européen ne se rapporte pas à un moment, mais à toute une époque enfermée entre les archaïsmes linguistiques non-analysables et les dernières innovations communes de la période préhistorique. Il faut se contenter d'un classement élastique en renonçant à délimiter les cases d'une manière trop sévère.

Kuryłowicz

§ 2. THE POSITION OF THE SIGMATIC AORIST IN THE INDO-EUROPEAN LANGUAGES

IN A masterly article published as early as 1908, A. Meillet demonstrated, critically and exactly, the recent character of the *s*-aorist, and its very limited role as the mark of a morphological type in Indo-European.¹ Meillet began by calling attention to the purely formal peculiarities which set the *s*-aorist apart among Indo-European morphs: first, that the suffix shows no vocalic alternations, appearing only as *-s-*; second, that it violates the stricture noted by F. de Saussure,² that vocalic alternations in inflexion occur only in the predesinential element (including unsuffixed roots), never in the presuffixal element, whereas the lengthened grade of the active *s*-aorist (on which see below) occurs 'across' the morpheme *-s-*; and third, that the dialect distribution and extent of the *s*-aorist varies extraordinarily, and in a fashion totally unrelated to the

¹ 'Sur l'aoriste sigmatique', *Mélanges de Saussure*, 81-106 (Paris, 1908). One of the rare reviews of this volume referred to Meillet's article as 'uno dei suoi articoli smaglianti per rigor lucido di argomentazione e felice novità d'intuizione' (L. Valmaggi, *Bollettino di Filologia Classica*, 17.27 [1910]).

² *Mémoire sur le système primitif des voyelles dans les langues indo-européennes*, 186 (Leipzig, 1879).

distribution of any other comparable linguistic feature. Meillet then proceeded to the examination of the varied manifestations of the *s*-aorist in the principal Indo-European dialects, and was able to show that in every one of them, the *s*-forms achieved a level of high productivity and extension only well within the period of the individual dialects themselves ; perhaps the most striking case is the near-universal generalization of the *s*-aorist in Slavic, whereas the intimately related Baltic group shows no trace of it whatsoever. In some of these languages the extension of *-s-* is largely a finished process by the time of our earliest extended records, as in Latin ; in others, characteristically enough among the oldest attested, such as Greek and Indic, we can observe the gradual extension of *-s-* as mark of the aorist during the historical period itself. The level of productivity of the *s*-aorist and its fundamentally intra-dialectal character is most clearly mirrored in the fact that in Slavic, Greek, and Celtic, in completely independent fashion, it was this morph to which the language had recourse, to form the aorist (or preterite) of derived secondary verbs : OCS *-axŭ*, *-ěxŭ*, *-ixŭ* ; Gk. *-ησα*, *-ωσα*, *-ευσα*, *-ασα*, *-ισα* ; OIr. (3sg. abs.) *-ais*, *-is* ; MW *-as*, *-es*, *-is*, *-wys*. In these languages, the sigmatic aorist was an expanding, open, and productive category.

Meillet's conclusion may be reproduced here : ' l'aoriste sigmatique est en principe, au point de vue indo-européen, une formation secondaire tirée de thèmes existants dans la langue, et non une formation primaire, immédiatement rattachée à la racine, et, en second lieu, . . . cet aoriste existait à peine en indo-européen commun et . . . il résulte presque entièrement de développements propres à chacun des dialectes indo-européens et relativement récents.'

Though there are minor points to be corrected in this work, Meillet's basic thesis must be considered valid, purely on the basis of the evidence available at the time he wrote ; as we shall see presently, the subsequent coming to light of Hittite and Tocharian has only strengthened his case. But for an age unready for a ' relativistic ' view of reconstructible

phenomena, or for an understanding of the continuity and dynamism of linguistic development, his paper was premature; little notice was taken of it, aside from mere citation. It is strange to contrast the cogency of Meillet's reasoning and the lucidity of his presentation with the following pronouncement, written twenty years later: '*Dieser s-Aorist ist zweifellos eine sehr alte Bildung, denn er zeigt die Wirkung des idg. Akzentes, und er muss daher gebildet gewesen sein, ehe diese grosse einschneidende Umwälzung im Idg. eingetreten ist. Anderseits ist er auch jung, da er zu einer jüngeren Schicht von Verben gehört.*'³

Meillet's arguments may be supplemented now from many sides, both in the light of new linguistic data, and new or better interpretations of data existing at the time he wrote.

He held there were two alternative *élargissements*, **-s-* and **-is-*, both subsequently charged with morphological function.⁴ In the case of *-s-* he was almost certainly right; but to his doctrine of the relation of *-s-* to *-is-* one can raise serious objections. This *-is-* is the element identified by Mariès in the Armenian aorist morphs *-eaç* < **-is-ā-ske-* and pple. *-eal* < **is-ā-lo-*,⁵ and appearing in various forms in the Latin perfectum: *ēg-er-am*, *ēg-er-ō*, *ēg-er-im*, *ēg-is-sem*, *ēg-is-se*; *ēg-is-tī*, *ēg-is-tis*, *ēg-er-unt*.⁶ To these he added the Indic *-iṣ-* aorist.

It has now been shown by H. Karstien⁷ that the *-e-* of the Armenian forms, e.g., *gorceac* 'made', has nothing

³ H. Hirt, *Indogermanische Grammatik* 4.245 (Heidelberg, 1928). The italics are mine. Hirt's earlier objections to Meillet's article, *Handbuch d. griech. Laut u. Formenlehre*² 556 (Heidelberg, 1912), cited with approbation by Schwyzler, *Griechische Grammatik* 1.749, are not supported by any actual contrary argumentation.

⁴ Similar statements may be found elsewhere in Meillet's work: *Introduction*⁸ 214; *Traité de grammaire comparée des langues classiques*² 265-6, 349-50. The last and fullest exposition of his doctrine is the article 'Sur le type latin *egī*, *egistī*', *BSL* 34. 127-30 (1933).

⁵ *Rev. des études arm.* 10.167-82 (1930); Meillet, *Esquisse d'une grammaire comparée de l'arménien classique*² 115-6 (Vienna, 1936).

⁶ Forms such as 2sg. *-stī* for *-sistī* are not ancient, but result from haplogy: cf. A. Ernout, *Morphologie historique du latin*² 336 (repr. Paris, 1945).

⁷ 'Das slavische Imperfekt und der armenische *-açe-* Aorist', *Festschrift für Max Vasmer*, 211-29 (Wiesbaden, 1956).

to do with an **-is-*, but comes rather from **-ey(e)-*: an explanation much to be preferred on morphological grounds. We may thus discount the Armenian forms. Since, as will be shown in more detail below, the Indic *-is-* aorist likewise has nothing to do with this element **-is-*, we are left with the Latin forms alone as evidence for a morph **-is-*.

Now the function and distribution of the two morphs *-s-* and *-is-* is in no way parallel. Aoristic *-s-* functions, in all the languages where it appears, as a tense or aspect marker, suffixed to a basic stem or root, to which endings are directly added. But *-is-*, in contradistinction, either appears further characterized by an additional mark (Lat. **-is-ā-*, **-is-e-*, **-is-ī-*, **-is-sē-*), suffixed to an already aspectually determined form, as a mark of *modal* function, or else appears as a desinential component (Lat. *-is-ti*, *-is-tis*, **-is-ont*) with partially predictable distribution (before *-t-*).⁸ This element *-is-* is widespread in the Latin perfectum, but in itself it is not a mark of the function of the perfectum; it is always suffixed to an already characterized base. The mark of the perfectum is in *ēg-* beside *ag-*, exactly as in *dīx-* (*dīc-s-*) beside *dīc-*.

In view of these functional divergencies between *s*-aorists and the reflections of *-is-* it is difficult to imagine a direct connection or alternation *-s-* : *-is-* in any but the remotest past. The simple fact of the widely differing distribution of the two among the Indo-European dialects is also against it. For while *-s-* as aorist is found in Indo-Iranian, Greek, Slavic, Latin, Celtic, Illyrian (e.g., Messap. *hipades*⁹) and Albanian,¹⁰ *-is-* may be plausibly identified only in Latin

⁸ As insisted on by Meillet. For the relation of this phenomenon to the Hittite and Tocharian evidence, see further below.

⁹ There are seven attested sigmatic aorists in Messapic, though not all are sure. They are conveniently listed in J. Whatmough's Messapic grammar, *Præ-Italic Dialects* 2.609 (Cambridge, 1933).

¹⁰ I cite Albanian and Illyrian separately, since I think it has not yet been adequately demonstrated that the former is a later dialect of the latter. E. Hamp's remarks, in 'Albanian and Messapic', *Studies presented to Joshua Whatmough* 73-89 ('s Gravenhage, 1957) while interesting, are finally inconclusive.

and Armenian, with the latter not showing simple *-s-*. In a summary article published only three years before his death, Meillet returned once more to the problem.¹¹ He concluded quite rightly that the element *-is-* is not a characteristic of the aorist, but still maintained the principle of essential identity of *-s-* and *-is-* as Indo-European 'élargissements'. The fact remains that in the historical languages *-s-* is an aorist mark whereas *-is-* is not.

On purely formal grounds alone Meillet's analysis is hard to maintain. An alternation *-T- ~ -iT-* is completely isolated in Indo-European morphology, and an enlargement with a syllabic center (*-i-*) runs counter to the very definition of enlargement. Were it a suffix we should expect a full grade alternant **-yes-* beside *-is-*, as in the structurally parallel comparative **-yes/is-* or the optative **-yē/i-* < **-yeH/iH-*. But we do not have such a form. For the time being we can only regard *-is-* as one of the uncertainties of Indo-European grammar. That there was an Indo-European element *-is-*, of unclear function and limited extension, is certainly at least possible. But it must be separated from the morph *-s-*, with which it shares no single formal, functional, or distributional characteristic.¹²

The morph *-is-* most emphatically has nothing to do with the Indic *-iṣ-* aorist. Meillet's entire justification for taking the *-iṣ-* aorist as reflection of his *-is-*, and not, with the majority of linguists both before and after, as reflecting **-as-* (**-Hs-*), rested on the interpretation of a very few Gathic aorists showing apparent *-iṣ-*: *xšnaviṣā*, *čaviṣi*, *čaviṣtā*. In Iranian an internal *i* from laryngeal (shwa) is lost, hence *-iṣ-* if found must go back to **-iṣ-*. But in these Gathic forms, already suspect by their feeble attestation and the graphic ambiguity inherent in this text,

¹¹ 'Sur le type latin *ēgī ēgisti*', *BSL* 34.127-30 (1933).

¹² One possible avenue of comparison for **-is-*, though perhaps only typological, is the Osco-Umbrian future perfect with the desinential component *-us-*, e.g., Umbr. 2 sg. *benus* 'uēneris' 3 sg. *benust* 'uēnerit', 3 pl. *benurent* 'uēnerint'. The parallel Lat. **-is-ont* (*-erunt*) ~ OU **-us-ent* (Umbr. *-urent*, Osc. *-uze(n)t*) is particularly striking. In this case we would have to deal simply with a formally obscure Italic innovation.

the apparent *-iṣ-* has been shown by Kuryłowicz and more recently H. Humbach to be merely an orthographic peculiarity.¹³ They are to be read, in normalized Avestan, *xšnuvišā*, *čāēšī*, *čōišā*, and the Iranian evidence for *-iṣ-* aorist simply disappears; along with it, the only reason for connecting the Sanskrit *-iṣ-* aorist with Indo-European **-iṣ-*. The absence of an *-iṣ-* aorist in Iranian is in complete accord with the general, if not absolutely regular, loss of internal *i* < **ə* in that language.¹⁴

The Sanskrit *-iṣ-* aorist functions exactly like the *-s-* aorist, as an aspect marker, and totally unlike the various functional manifestations of the morph *-is-*. Its origin, as has long been recognized,¹⁵ lies in the suffixation of *-s-* to *seṭ* roots in full grade form *TERH-*. The resultant *TERH-s-* appears in Sanskrit as *TāRi-s-*,¹⁶ e.g., *atāriṣam* to *tar-*, IE **terH-*. Kuryłowicz (*loc. cit.*), subscribing completely to this interpretation, has described in rigorous and elegant fashion the analogical mechanics of the isolation of *-iṣ-* as a new morpheme, and its gradual extension beyond its originally phonologically justified bounds, replacing *-s-*.

¹³ Kuryłowicz, 'Le degré long en indo-iranien', *BSL* 44.61 (1948), who gives aor. *xšnaoṣā* for *xšnəvišā*, as well as *čāēšī*, *čōišū*. See also *Apophonie* 163-4. Humbach, *Münch. Stud. Spr.* 2.7 = 22.14, and most recently 9.69-71 (1956), prefers to take *xšnəvišā* as an opt. mid. 2 sg. *xšnuvišū*. In either case, the form is not an aorist in *-iṣ-*.

¹⁴ See H. M. Hoenigswald in *Evidence for laryngeals* 25 (Austin, 1960).

¹⁵ A Thumb, *Handbuch des Sanskrit* 381 (Heidelberg, 1905); M. Mayrhofer, *Handbuch des Pāli* 1.158 (Heidelberg, 1951); L. Renou, *Grammaire de la langue védique* 290 (Paris, 1952); H. Pedersen, *Les formes sigmatiques du verbe latin* 13 (*KDVS Hist.-fil. Med.* 3.5 [1921]). T. Burrow, *The Sanskrit Language* 338-9 (London, 1955), presents on the other hand an unclear and complicated amalgam of explanations, largely conditioned by his own very personal (and generally unaccepted) views on "Schwa" in Sanskrit, *TPS* 1949.22-61. Burrow's method of presentation has been neatly scored by P. Thieme, *Lang.* 31.428-49 (1955). His apparent basic premise is that the *-iṣ-* aorist is formed on nominal stems in the compound suffix *-i-s-*, and he adduces *arociṣṭa* : *rociṣ-* 'light'. But this comparison loses in cogency beside the fact that *arociṣṭa* is a Brāhmaṇa form; the Rīg-Veda has only (*a*)*roci* (3 sg. mid), *ārūrucat*, and pple. *rucīnd-*.

¹⁶ Both quantities are attested in Vedic. Historically, only the short vowel is proper; the long vowel is more recent, and analogical in origin, as shown by Kuryłowicz, *Apophonie* 162-3. See below, chapter two.

The more characterized morpheme *-iṣ-* will tend to replace the simpler, but iso-functional morpheme *-s-*, in the terms of his first law of analogy.¹⁷

This process of the expansion of *-iṣ-* is continued even in Middle Indic : cf. Pāli and Ardha-Māgadhī Prakrit 1sg. *pucchi(s)am* 'I asked' (Sky. *-iṣam*), Pāli 2sg. *pucchittho* (Skt. mid. *-iṣ-thāḥ*), 3sg. *pucchittha* (Skt. mid. *-iṣ-ṭa*), as well as 1sg. *apucchīm*, 2-3sg. *apucchi*. Compare also Pāli *agacchi* 'he went', *amaññissam* 'I thought' (Skt. *man-ya-*), Ardha-Māgadhī *annesī* 'he knew' (Skt. **ajñāyīṣīt*), *bhuvi* 'he was'.¹⁸

We have, however, a few very precious indications which show that the formation of the *-iṣ-* aorist, i.e., the suffixation of *-s-* to root final *-i-* < *-H-*, dates from the Indic period. These are the occasional irregular, so-called 'asigmatic' *-iṣ-* aorists which crop up in Vedic. The 1sg. forms *ākramīm*, *avadhīm* (both RV), *agrabhīm* (T.S.), commonly cited in this connection (e.g., Whitney. Burrow), are indecisive, since they are much more likely to be analogical creations according to such a proportion as

<i>ásicam</i>	=	<i>ádām</i>	=	<i>ákramīm</i>	(replacing <i>ákramiṣam</i>)
<i>ásicas</i>		<i>ádās</i>		<i>ákramīs</i>	
<i>ásicat</i>		<i>ádāt</i>		<i>ákramīt</i> .	

The likelihood of *-īm* being analogical and relatively recent,¹⁹ already more than plausible by its being confined to later strata of the Vedic language, is heightened by the fact that in Pāli the regular 1 sg. of the 's-aorist' is *-siṃ* < *-sīm* analogical to 2 and 3 sg. *-si* < *-sīt* : in other words, a repetition of the same analogical process.

¹⁷ 'La nature des procès dits "analogiques"'. *Acta Ling.* 5. 15-37 (1945-9) = *Esquisses Linguistiques* 66-86 (Wrocław-Kraków, 1960).

¹⁸ Mayrhofer, *Handbuch des Pāli* 1.156-9; R. Pischel, *Grammatik d. Prakrit-Sprachen* (*Grundriss d. indo-arischen Philologie u. Altertumskunde* 1.8) 359-61 (Strasburg, 1900). The clearest purely descriptive analysis is given by F. Edgerton, 'The Middle Indic verbal system', *Asiatica* (Festschrift Weller), 78-81 (Leipzig, 1954). He shows that the repartition is simply 3 sg. *-si* (< Skt. *-sīt*) to stems in long vowel, *-i* (< Skt. *-īt*) to stems in thematic vowel *-a-*.

¹⁹ In fact, the position taken by Meillet, *BSL* 34.128, and Renou, *Grammaire* 290.

But we have a few other occasional forms, where no analogistic explanation is possible: compare the hapax 2 pl. aor. inv. *avitā*²⁰ 'favor' (RV 7.59.6) beside *aviṣṭāna*, from the set root *av-*. Evidence for laryngeal character is furnished by the ppl. *ūta-* and derivative *ūtī-*, both morphologically isolated forms where analogical lengthening is not possible. The most telling, however, is the hapax 1 pl. *atārīma* 'we overcame' (RV 8.13.21) < **terH-me*, to the set root *tar-*, beside the more recent, regular sigmatic form *atārīṣma* (3 exx.) < **terH-s-me*. For this form, aside from the detail of the desinence and augment, and the analogical Indic Dehnstufe, may be exactly equated with Hitt. *tarh-wen* (*tar-hu-en*) 'we conquered', 3 sg. pres. *tarh-zi* (*tar-ah-zi*), an athematic root of the shape *TERH-*. This is the most ancient state of the present/aorist system: the simple addition of secondary endings to an athematic root form.²¹ Historically, it is to a sub-type of root aorists (set forms *TERH-*) that the *-s-* was suffixed, to form the Indic *-iṣ-* aorist.

This situation is confirmed by the (methodologically important) independent testimony of a third Indo-European language. This is a single extraordinary archaic Celtic form, preserved by virtue of being in isolation as a component of a suppletive paradigm: OIr. *do-cer*, 3sg. pret. of *do-tuit* 'falls'. This form has been shown by Thurneysen (*OIGr.* 437) to be an old root aorist **kerat* (**kerH-t*), etymologically and typologically comparable to Skt. (AV) (*a*)*śarīt* 'he crushed', aorist of *śrñāti*. But *-cer* is, in fact, a more archaic form than (*a*)*śarīt*, which is an *-iṣ-* aorist, i.e., an *s*-aorist to a set base.²² Celtic **kerat* < **kerH-t* shows an athematic and suffixless (root) aorist

²⁰ Padapāṭha *avitā*, as the form is commonly cited: e.g., Whitney § 908, Burrow 339, Renou 290.

²¹ Compare the remarks of George S. Lane, *Lang.* 35.172 (1959).

²² Unless one wished to take it as an analogical refashioning of an older athematic and asigmatic **aśarīt*; only the 3sg. is found. But such a form is without parallel in Vedic, though it doubtless may once have existed. To derive OIr. *-cer* from a 3sg. **ker-t*, with H. Wagner, *ZCP* 28.10-11 (1960), is of course impossible according to the phonology of Old Irish, and in any case ignores the laryngeal (set) character of the root **kerH-*.

formation, and may itself be directly equated, for the type, with such Hittite preterites 3sg. as *tarh-t*, *šanh-t*, *šarh-t*, *walh-t*, *parh-t*, *marh-t*, all laryngeal (seṭ) bases *TERH-*.

Meillet's basic thesis on the nature of the *s*-aorist is in no way invalidated by his unacceptable view on the connection with the Sanskrit *-iṣ-* aorist; rather it is strengthened. For the expansion of the *-iṣ-* aorist even down into the Middle Indic period represents part of the same development which Meillet observed so clearly elsewhere: the great extension of *-s-* only after the separation of the dialects. That in Sanskrit the form *-iṣ-* gradually supplanted the simpler *-s-* is merely a historical accident, the general spread of seṭ at the expense of aniṭ forms; as we have seen above, the basic nature of the suffix in form and distribution remained the same.

This view of the late spread of the *s*-aorist is further strengthened and confirmed by more recent work in comparative linguistics, subsequent to the appearance of Meillet's study, and not dependent upon it.

Thus the peculiar forms making up the Sanskrit seventh (*-sa-*) aorist, of the type *amṛkṣat* < *mṛj-*, have been shown by Kuryłowicz²³ to be by their origin not thematized *s*-aorists,²⁴ but rather 'sigmatized' thematic aorists. The relative chronology of the two formations is clear: the thematic aorist is the older, and in this one small formal subgroup (roots in final *ś*, *j*, *h*, and *ṣ*) the thematic aorist has been partially ousted by the encroachment of the newer and productive—'dominant' in Kuryłowicz's sense—morph in *-s-*.

One may point finally to the nature of the characteristic accessory formal mark of the *s*-aorist: the apparent lengthened grade *ē* of the root syllable generally assumed in the standard handbooks of Indo-European. It is to the detailed investigation of this phenomenon in the various Indo-European dialects that the second chapter is devoted.

²³ *Indoiranica*, *Comptes rendus de la Société des Sciences et des Lettres de Wrocław* 3.1-6 (1948). Cf. also *Apophonie* 164 n. 21.

²⁴ The difficulty with this superficial explanation was already seen by Whitney, *Sanskrit Grammar* § 919a.

§ 3. THE VOCALISM OF THE SIGMATIC AORIST

THE original study of Meillet on the sigmatic aorist was the first to call attention to the fact that the lengthened grade generally assumed to be characteristic of the active *s*-aorist violated one of the strictures noted by F. de Saussure for Indo-European paradigmatic apophony. According to de Saussure's formulation, vocalic alternations in inflexion occur only in the predesinential element, never in the presuffixal element. Thus in a paradigm of the structure $R + D$,¹ *R* may exhibit apophony: Skt. *as-ti* : *s-anti*, *pāt* : *pad-am*. In a paradigm of the structure $R + S + D$, *S* may exhibit apophony, but not *R*: Old Lat. *s-iĕ-s* : *s-ī-tis*, Gk. *δῶ-τωρ* : *δῶ-τορ-ος*. But in the sigmatic aorist, of the structure $R + S + D$, the apophonic variation is found in *R*: Skt. *avāk-ṣ-am* : *vak-ṣ-at*. This anomaly is unique in Indo-European morphology. If the lengthened grade in the *s*-aorist is inherited from Indo-European, then it must stand as an aberrant formation.

We have seen in the preceding chapter that Meillet's thesis on the lateness of the sigmatic aorist as a category in Indo-European is entirely valid, and that linguistic studies subsequent to his have universally confirmed Meillet's conclusion. The traditional assumption of Indo-European antiquity for the lengthened grade as an accessory formal mark of the sigmatic aorist could itself be used as an additional indication of the lateness of this category in Indo-European.

It is abundantly clear from Kurylowicz's *Apophonie* that the lengthened grade is the latest apophonic development in Indo-European, and as a derivational process in the parent language one of recognizedly limited extent. As I have shown in a review of Kurylowicz's work,² the great florescence of vocalic length as a morphological mark comes about in large measure independently, and from a variety of sources, only in the historical dialects themselves. It is

¹ Symbols: R = root, S = suffix, D = desinence.

² *Lang.* 34.381-98 (1958).

characteristic that this chronologically later formal mark would be associated with a chronologically later formal category such as the *s*-aorist, just as it is the distinguishing mark of the late and dialectically conditioned phenomenon of *vṛddhi*.

In this review it was furthermore questioned whether we were, in fact, justified, with Kuryłowicz and others, in assuming that the *s*-aorist had lengthened grade at all in Indo-European itself; in other words, that the lengthened grade characteristic of Indo-Iranian, Slavic, and Latin might be a parallel but independent creation in these three dialects alone. Kuryłowicz's justification can be summarized in the commonly given threefold equation Skt. *avākṣam* : Lat. *uēxi* : OCS *věsŭ*. But the fact remains that both Celtic (in the *s*-subjunctive and *t*-preterite) and Greek show no evidence for lengthened grade: even accepting the traditional view, it is necessary to assume that the development of a lengthened grade *ē* associated with the *s*-aorist took place only dialectally within the Indo-European group, and was never universal.

Likewise in the context of the traditional view of Indo-European lengthened grade in the *s*-aorist, it should not have escaped the attention of scholars that the three groups which show evidence for lengthened grade in historical sigmatic forms, Indo-Iranian, Latin and Slavic, are dialects which have gone farthest in exploiting vocalic length as a derivational mark elsewhere in their systems, both in noun and verb formation. One need only witness in Indo-Iranian *vṛddhi* and the secondary paradigmatic apophony *ā* : *a*, the numerous long vowel categories of Balto-Slavic nouns and verbs, or the Latin long vowel perfectum forms.

Kuryłowicz's *Apophonie* has little to say about lengthened grade in Italic, but there is a great deal in this aspect of Latin to be investigated. I may point out here two types which seem clearly to reflect a purely Latin lengthened grade, in both nominal and verbal derivation. The first consists of simple nouns with nominative singular in *-ēs*, and

compound nouns with nominative *-ēs*, or the suffix *-yo-*, which may be compared with short vowel forms:

<i>sēd-ēs</i>	<i>dē-ses, sed-ēre</i>
<i>mōl-ēs</i>	<i>mol-estus</i>
<i>lāb-ēs</i>	<i>labō</i> (cf. <i>lābor</i>)
<i>rūp-ēs</i>	<i>rumpō</i>
<i>amb-āg-ēs</i>	<i>agō</i>
<i>com-pāg-ēs</i>	<i>pangō</i>
<i>con-tāg-ēs</i>	<i>tangō, tagat</i>
<i>ad-āg-iūm</i>	<i>aiō</i>
<i>con-tāg-iūm</i>	<i>tangō</i>
<i>suf-frāg-iūm</i>	<i>frangō</i>

The second group comprises the three following verbs, which may in similar fashion be related to short-vowel forms:

<i>sōpiō</i>	<i>sopor</i>
<i>sāgiō</i>	<i>sagāx</i>
<i>mōlior</i>	<i>molestus</i> ³

Both of these types, the verbal as well as the nominal, represent derivatives built on an earlier root noun with short vowel; in the first group we have extended nominal forms (replacing the earlier root noun, as clearly in *sēdēs*), and in the second group, denominative verbs built on the root noun. The root noun serving as base is preserved in a few cases, particularly in composition: *dē-ses*, *rēm-ex*, Gk. ἄ-παξ show the root nouns **sed-*, **ag-*, **pag-* which are the base of the long vowel derivatives *sēd-ēs*, *amb-āg-ēs*, *com-pāg-ēs*. One may extend the reasoning, and postulate

³ Benveniste has likewise suggested orally (Ecole Pratique des Hautes Etudes, February, 1958) that Latin *uādō* has the same apophonic relation to *uadum*; it is a denominative verb with lengthening of the vowel of the nominal base form.

similar root nouns to account for the remaining forms of the lists above:

<i>*lab-</i>	→	<i>lābēs</i>
<i>*tag</i> ⁴	→	<i>-tāgēs, -tāgium</i>
<i>*ag-</i>	→	<i>-āgium</i>
<i>*frag-</i>	→	<i>-frāgium</i>
<i>*sop</i> ⁵	→	<i>sōpire</i>
<i>*sag</i> ⁴	→	<i>sāgīre</i>
<i>*mol-</i>	→	<i>mōliri, mōlēs.</i>

Having established the existence of this derivational pattern in prehistoric Latin, it becomes possible to account for other Latin nouns of this structure by the assumption of transformed root nouns: *clād-ēs* < **klad-*, morphological zero grade in *a* = **kld-*: *-cellō* < **keld-*; *rād-ix* < **wrad-*, morphological zero grade in *a* = **wrd-*. Compare Welsh *gwraidd* 'roots' < **wrad-i-*, and Goth. *waurts* 'root' < **wrd-i-*. *Strāgēs* and *nūbēs* probably admit of the same origin, as does *uātēs* < **wat-* (with *a*-vocalism) beside Skt. *api-vatati* 'blows; inspires', W. *dywedud* 'speak' (**wet-*); but these demand special investigation.

The citation of these Latin forms may suffice here to indicate the important and hitherto unrecognized role of vocalic lengthening as an accessory derivational mark in Latin. It is clear that we have here to deal with a purely Latin morphophonemic process, and not one inherited from Indo-European.

The sigmatic aorist of Common Celtic is reflected in three categories in the Old Irish verb: the *s*-subjunctive, *t*-preterite, and *s*-preterite. These three, with a small number of exceptions which can be accounted for, are in strict complementary distribution according to the final element of the root: roots in final *-T* form an *s*-subjunctive, roots in final *-R* form a *t*-preterite, and 'roots' in final vowels,

⁴ These root nouns underlie *tagūx*, *sagūx*; compare *capūx*: root noun *au-ceps*, **facūx* (*efficūx*): root noun *pontī-fex*, and see also the remarks in *Evidence for Laryngeals* 188-9.

⁵ Simply extended by *-es-* in *sopor*.

i.e., the secondary, derived verbs, form an *s*-preterite. In part II of this work may be found a detailed investigation of these forms, and the demonstration of this thesis. We may assume for our purposes here the existence in Celtic of sigmatic forms of the structure *TET-s-*, *TERT-s-*, *TER-s-*; the roots in final vowel need not concern us, since they represent secondary and not primary derivatives.

All of these types in Old Irish show a short, not a long root vowel, where that vowel reflects Indo-European *e*: **sed-s-*, Old Irish subjunctive stem *sess-*; **melg-s-*, Old Irish subjunctive stem *mell-*; **ber-s-*, Old Irish *t*-preterite stem *bert-* < **bers-t-*. For the complete roster of forms attested, see the relevant chapters in part II *infra*. On methodological grounds one must exclude the types *TERT-s-*, *TER-s-*, since it is conceivable that in these forms the vowel could result from the shortening of a tautosyllabic long diphthong: $\bar{e}R > eR$. But there is no conceivable process whereby an inherited **sēd-s-* would be shortened to **sed-s-*, O. Ir. *sess-*. We must recognize that the original structure is that mirrored in the *TET*-roots with *e*-vocalism: **sed-s-*. The root shows *e*-grade, not the lengthened $\bar{e}$ -grade characteristic of Indo-Iranian, and occurring in a small number of forms in Slavic and Latin. Compare Kuryłowicz, *Apophonie* 160 n. 18: 'Or malgré la décadence de l'apophonie en celtique on s'aperçoit que le subjonctif en *s* (= aoriste sigmatique à désinences primaires)⁶ y présente l'ancien degré plein.' This fundamental fact of the existing data of the Celtic verb should be more fully emphasized in Indo-European studies than it generally is: the lengthened grade found in Indo-European, Slavic, and Latin even in terms of the traditional interpretation must represent a dialectal phenomenon, never fully developed in late Indo-European.

⁶ This is inaccurate. The *s*-subjunctive is a sigmatic aorist with both primary and secondary endings: 3 sg. abs. *feiss*/conj. *-fé* < **wedh-s-ti*/**wedh-s-t*. The pattern is identical with that of the present indicative, save for the presence of the thematic vowel in the latter: 3 sg. abs. *fedid*/conj. *-feid* < **wedh-e-ti*/**wedh-e-t*. Compare the remarks in the Prolegomena, § 1 *supra*.

Now we have in Greek a sigmatic aorist with simply full grade vowel, never lengthened grade. It is customary in the handbooks to assume quite simply that the lengthened grade was somehow lost in Greek: typical is the initial sentence of § 32 of Kuryłowicz's *Apophonie*: 'Le grec, langue conservatrice sous divers égards, a complètement perdu le degré long caractérisant l'aoriste sigmatique non seulement en indo-iranien, mais aussi en latin et en balto-slave.' Compare Schwyzler, *Gr. gr.* 751, Meillet-Vendryes 206, Chantraine, *Morphologie historique du grec* 194. To account for this peculiar total abolition of such a feature, different explanations have been offered,⁷ principally the supposed analogy of the shortening of the tautosyllabic long diphthongs: a primitive **e-dēik-s-m* would have regularly yielded attested *ἔδειξα*. Kuryłowicz rightly saw the weakness in this argument; there is simply no reason why a shortening **dēik-s- > deik-s-*, which represents a phonological neutralization of vowel quantity, should then cause a morphological vowel shortening **dēk-s- > dek-s-* (*δέξ-, δέχομαι*). But Kuryłowicz himself offers an explanation of the vowel-shortening which is considerably more complicated, and hardly more cogent: the loss of the lengthened grade is a morphological consequence of the loss of *s* between vowels. Kuryłowicz's reasoning is as follows. The phonetic loss of intervocalic *-s-* in forms such as **ἔχεν-σ-α > *ἔχεν-α*⁸ resulted in a new appreciation of the mark of the aorist: instead of being *-σ-* it became *-α-* plus the accessory mark *-σ-* 'dans des conditions spéciales, à savoir après consonne' (**ἔχεν-α* but **ἔδεικ-σ-α*). Under these new conditions the accessory mark *-σ-* ceases to condition the root by implying the lengthened grade, since the appearance of *-σ-* is itself conditioned by the root form (in final consonant). Hence **ληξ-* (*λεχ-*) is replaced by *λεξ-* (Hom. *λέξαι*). Subsequently the compound morpheme *-α-* plus implication of *-σ-* evinces

⁷ See the bibliography in Schwyzler, *l. c.*, who himself favours the analogy of the subjunctive with short root vowel.

⁸ The historically attested *ἔχενα*, *χένα* (Hom.) are probably secondary forms, remodelled athematic aorists. Cf. Meillet-Vendryes, *Traité* 203.

the simple morpheme *-a-*, in accord with his first law of analogy: the type **ἐχεν-a* is thus replaced by *ἐχεν-σ-a*.

Though Kurylowicz is characteristically the first to have considered from a scientific point of view the assumed analogical processes involved, his argument remains unconvincing. In the first place the number of primary verbs of the structure **ἐχεν-a* is relatively limited; one might invoke the secondary derived verbs in vocalic stem-final, but there is no evidence that Common Greek ever possessed, or even would have phonologically tolerated such hypothetical types as **ἐτίμα-a*, **ἐδίλω-a*, **ἐφίλη-a*, **ἐβασίλευ-a*. Even in Homer the present of denominative verbs in *-έω*, *-άω* is far more frequent than the aorist. The aorists are late.

In the second place, Kurylowicz must assume that the generalization of *-σα-* at the expense of *-a-* in his hiatus type (**ἐχεν-a* replaced by **ἐχενσα*) must come some time after the loss of intervocalic *-s-*, long enough for the elimination of every inherited long vowel sigmatic aorist in the Greek language, and he assumes that the reason for the generalization of *-σα-* is his first law of analogy. But the *immediate* consequence of the loss of intervocalic *-σ-* was the loss of a phonemic contrast *σσ : σ* in intervocalic position. Hence the inherited aorist types, e.g., **wes-s-* (ἐννυμι) **geus-s-* (γεύομαι), with historical *-σ-σ-* could *thereupon* be simplified to *-σ-*: Hom. ἔσσαι ~ ἔσαι, ἔγενσα. Together with the *s*-aorists from verbs in root final dental stop where *τ, δ, θ + σ* likewise yielded *-σσ/σ-* in prehistoric times (e.g., Hom. ἐρεῦσαι : ἐρεύθω), these forms in themselves are sufficient to reestablish the aorist mark as *-σα-*, and bring about the reintroduction of *-σ(a)-* in the roots with vocalic final. There is no reason to assume a long interval between the loss of *-σ-* and the reintroduction of *-σα-* in the aorist, nor the mediation of a compound morpheme *-a- +* implication of *-σ-*. I suspect rather that the morphological reintroduction of *-σα-* followed almost immediately upon the phonetic loss of intervocalic *-σ-*.

Kuryłowicz's explanation finally fails to explain clearly why a previously existing long vowel in the aorist ($*\lambda\eta\xi-$) should be shortened (Hom. $\lambda\epsilon\xi-$). If the lengthened grade is of Indo-European date, as assumed by Kuryłowicz, then the form is inherited as, e.g. $*(e-)l\bar{e}gh-s-m$ (Gk. $*\epsilon\lambda\eta\xi a$); it is at best questionable to assume that in Greek of the period in question the lengthening in the aorist continued as a living morphophonemic process capable of decomposition ($\lambda\epsilon\chi-$ + insertion of $-\epsilon-$ when suffixed by $-\sigma-$, whence $*\lambda\eta\xi-$). But if the new aorist suffix were $-a-$ + implication of $-\sigma-$ where the root ended in a consonant, why then should not the aorist form $*\lambda\eta\xi a-$ ($\lambda\eta\chi-\sigma a-$) simply remain as such? If the $-\sigma-$ has ceased to condition the root, as Kuryłowicz expressly states, then there is no motivation for its conditioning a shift from $*\lambda\eta\chi-$ to $\lambda\epsilon\chi-$ in the aorist. Furthermore, in the case of $\lambda\epsilon\xi-$ 'lie' and more clearly $\acute{\epsilon}\sigma-$ 'seat', there is simply no root form in short vowel $\lambda\epsilon\chi-$ or $\acute{\epsilon}\delta-$ to motivate the assumed shift from $*\lambda\eta\xi-$ to $\lambda\epsilon\xi-$ or $*\acute{\eta}\sigma-$ to $\acute{\epsilon}\sigma-$, to serve as the 'radical' form on which to recreate a sigmatic aorist.

From the foregoing it is clear that it has not been possible to account for the presence of a short root vowel in the Greek sigmatic aorist, on the assumption that Greek inherited a long root vowel in this formation. We are thus forced to the contrary assumption, namely, that THE SIGMATIC AORIST IN GREEK WAS INHERITED FROM LATE INDO-EUROPEAN WITH A SHORT ROOT VOWEL, and that this vocalism was continued unchanged into the historical period. The only long-vowel 'sigmatic' aorist in Greek is the post-dialectal type of Attic-Ionic $\acute{\epsilon}\phi\eta\nu-a$ ($\phiαίνω$) $\acute{\epsilon}\delta\epsilon\mu-a$ ($\deltaέμω$), etc., from compensatory lengthening: $*\acute{\epsilon}\phiαν-\sigma a$ $*\acute{\epsilon}\delta\epsilon\mu-\sigma a$. For this formation Kuryłowicz's concept of the $-a-$ aorist is entirely valid.

With the assumption of a Common Greek sigmatic aorist in short root vowel, inherited as such from Indo-European, we can compare even certain individual lexemes in Greek and Celtic. These are intended primarily as typological comparisons, and do not necessarily imply

direct inheritances in both languages of a sigmatic aorist in the individual lexeme. Since this was the productive aorist mark in both languages, a given sigmatic form could have been formed independently by either or both, well within the period of the individual dialect. But the structures are identical. Compare the following (Celtic forms are Old Irish unless otherwise marked):

* <i>sed-s-</i>	ἐσ- (ἴζω)	<i>sess-</i> (<i>saidid</i> 'sits')
* <i>legħ-s-</i>	λεξ- (λεχ-)	<i>less-</i> (<i>laigid</i> 'lies')
* <i>reg-s-</i>	ὀρεξ- (ὀρέγω)	<i>ress-</i> (<i>rigid</i> 'stretches')
* <i>wreg-s-</i>	(F)ρεξ- (ῥέζω)	* <i>wrex-s-</i> (W. <i>gwnech</i> 'faciat')
* <i>g^whedh-s-</i>	θεσ- (ποθέω)	<i>gess-</i> (<i>guidid</i> 'prays')
* <i>steigh-s-</i>	στειξ- (στείχω)	<i>tēss-</i> ⁹ (<i>tlagu</i> 'I go')
* <i>reudh-s-</i>	ἐρευσ- (ἐρεύθω)	<i>rōss-</i> ⁹ (<i>roindid</i> 'reddens')
* <i>geus-s-</i>	γευσ- (γεύομαι)	<i>gōss-</i> ⁹ (<i>do-goa</i> 'chooses').

The first five show unambiguously the conservation of the short root vowel *-e-*; while the phonetic treatment **ēi*, **ēu* > *ei*, *eu* could have yielded the last three forms, there is no morphological justification whatsoever within Greek or Celtic for assuming original long diphthongs.

We have established that of the Indo-European languages preserving the sigmatic aorist, Celtic and Greek agree in showing a normal *e*-grade root. This represents an agreement throughout the entire category of *s*-aorists in the two languages; in both Celtic and Greek the *s*-aorist is an extremely common formation, and all the attestations in these two groups are in agreement on the vocalism of the root suffixed by *-s-*.

Against this type, represented by Greek and Celtic, it is customary to oppose the evidence of Indo-Iranian, Latin, and Slavic, which show a long root vowel *ē* in the sigmatic aorist. The following statement of Kuryłowicz is typical: 'Trois témoignages indépendants certifient l'emploi du degré long à l'aoriste sigmatique: l'indo-iranien, le latin

⁹ With Irish *-ē*, *-ō* < IE *-ei-*, *eu-*.

et le slave' (*Apophonie* 159). The formula for the correspondence has found its expression in the alleged threefold equation Skt. *avākṣam* = Lat. *uēxī* = Ch. Slav. *věsŭ*, all three reflecting *IE *wēgh-s-*.

This seeming concordance between Indo-Iranian, Latin, and Slavic does not stand close scrutiny. In Indo-Iranian, the sigmatic aorist is essentially invariant: the singular shows the *vrddhi* form of the root. According to Whitney's *Roots*, the *s*-aorist is formed by a total of 136 roots in the 'earlier' language (99 in the earlier language + 37 in the earlier and later language). Of these, 26 are attested in the Rig-Veda (Kuryłowicz, *Apophonie* 161). But in Old Church Slavonic we have only 7 long vowel *s*-aorists, and in Latin only 4 or 5. The rarity of the forms in Slavic and Latin beside Indic (corroborated by Iranian) is alone enough to indicate a certain suspicious disparity. In a problem of linguistic history such as this, where we have to deal not with isolated lexemes but with a once productive morphophonemic transformation (*-e-* + suffix *-s-* → *-ē-* + *-s-*), it is inadequate to state that the process must be Indo-European in date simply because of the existence of forms in certain dialects which exhibit similar reflexes (*uēxī*, *věsŭ*). For the apparent lengthened grade of the *s*-aorist to be an Indo-European inheritance in Latin, Slavic, and Indo-Iranian, it is necessary to demonstrate that the forms in question cannot result from independent but convergent innovation in any or all of these three dialects. The burden of proof is particularly heavy in the case of this alleged Indo-European morphophonemic replacement of *-e-* by *-ē-* before suffix *-s-*, since we have established that the *-e-* before suffix *-s-* in Greek and Celtic alike cannot result from independent innovation: we must posit original short *e* on the evidence of these two dialects.

In fact, an examination of the Latin data shows clearly that a demonstration of the impossibility of innovation is not possible. Indeed there is every indication that the aorists of the type *uēxī* are a distinctly late, inner-Latin development.

We are to assume that the sigmatic perfects with *-ē-* alternating with *-e-* of the present continue an Indo-European alternation, which can be symbolized as *TeT-* → *TēT-s-*. Yet no one appears to have considered the evidence in Latin against such a hypothesis. We have in Latin a number of sigmatic aorists to roots of the structure *TeT-*, which show clearly a short root vowel, where there is no possibility that the vowel has been shortened:

<i>speciō</i>	<i>spexi</i>
<i>clepō</i>	<i>clepsi</i> ¹⁰
<i>gerō</i>	<i>gessi</i>
<i>(premō)</i>	<i>pressi</i> .

Since the present *cēdō* is from **ke-sd-ō*, formed on the root **sed-* 'go' (: *ōdós*, Russ. *xodit'*), the *s*-aorist with short vowel *cessi* probably represents an analogical innovation. But we can further compare the series of verbs with root enlargement *-t-*, which universally show a short vowel *s*-aorist:

<i>flectō</i>	<i>flexi</i>
<i>nectō</i>	<i>nexi</i>
<i>pectō</i>	<i>pexi</i>
<i>plectō</i>	<i>plexi</i> .

We may finally add another verb to this list, where the original *e*-vowel is obscured by the phonological change of *k^we* to *co-*:

<i>coquō</i>	<i>coxi</i> .
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This gives us a total of nine verbs in Latin which show evidence for full grade *-e-*, in the sigmatic aorist, not for lengthened grade *-ē-*. Roots of the structure *TeRT-*, *TeR-* (*mersi*, *contempsī*) have been excluded, since the

¹⁰ There is no justification for the form *clēpit* in Pacuvius Trag. 185, and the standard edition of Ribbeck adopts *clepsit*. In Cicero, de Leg. 2.9.22 Vahlen's edition reads *cleperit rapsitque*, but Madvig in his 1839 edition of Cicero de Fin. (ad. 5.25.74) demonstrated convincingly that this passage is to be read *clepsit rapsitue*, with the subjunctive-optative suffix *-si-* (cf. *faxit*) found in Livy 22.10.5 *si quis clepsit*. There are of course numerous attestations of the sigmatic perfect *clepsi*.

possibility exists that in these a tautosyllabic long diphthong could have been shortened. But in view of the unambiguous cases of aorists *TeT-s-*, it is far simpler to assume that the sigmatic aorist in Latin inherited full grade *e*-vocalism, and that this is preserved as such in the forms:

<i>dī-uidō</i>	<i>dī-uīsī</i>	<	* <i>dis-weid-s-</i>
<i>iubeō</i>	O. Lat. <i>iousit</i>	<	* <i>yeudh-s-</i>
<i>fluō</i>	<i>flūxī</i>	<	* <i>fleug-s-</i>

and further in the whole series of the type

<i>dicō</i>	<i>dixī</i>	<	* <i>deik-s-</i>
<i>dūcō</i>	<i>dūxī</i>	<	* <i>deuk-s-</i> ,
etc.,			

where the vocalism is full grade in both present and *s*-aorist. The evidence of the *TeT-* roots above points clearly to inherited *e*-grade, and the simplest account of the *TeRT-* roots points to the same conclusion; the positing of long diphthongs here is a clear violation of the principle of Occam's razor.

The forms in Latin which exhibit a sure long vowel in the sigmatic aorist are four:

<i>regō</i>	<i>rēxī</i>
<i>tegō</i>	<i>tēxī</i>
<i>trahō</i>	<i>trāxī</i>
<i>uehō</i>	<i>uēxī</i> .

The long vowel is attested by the apex in inscriptions for the first three, and by the testimony of Priscian for the last.¹¹ To these one may add, with Ernout, *Morphol.* 313, 317,

intel-legō *intel-lēxī* (and other compounds)

¹¹ Cf. F. Sommer, *Handbuch du lateinischen Laut- und Formenlehre* 2-3 556-7 (repr. Heidelberg, 1948); A. Ernout, *Morphologie historique du latin* 2 315 (Paris, 1945).

even though there is no explicit evidence for the quantity. This yields a maximum of five examples.¹²

Of these five examples, it is impossible that *trāxī* continues an Indo-European form, by its vocalism in *-a-*. The root form **tragh-* is confined to Italic and Celtic alone. In Celtic we have only nominal derivatives: OIr. *traig* 'foot' < **trag-et-*, Gaul. *uer-tragos* 'greyhound' < **trago-*. The long vocalism of the sigmatic aorist assumes only IE *e* → *ē*. The lengthened vocalism of *trāxī* is an isolated analogical shift of purely Latin date, just like the hapax perfectum *scābī* (*scāberat*, Lucilius) to *scabō*. It can have no independent value for Indo-European. The same is assumed by Ernout, *loc. cit.*, and by Sommer, *Handbuch* 557. We have clear evidence of a verbal stem in original short *a* root vowel which was not lengthened in the compound (*il*)-*liciō* -*lexī*-*lectus*, from **laciō* **-laxī* **-lactus*. The simplex *lacit* is attested in Paul. Fest. 116. A **lāxī* **-lāctus* would of course not have been weakened to *-lexī* -*lectus* in non-initial syllable. The form (*per*)-*cussī*, even though the phonological treatment is somewhat more opaque, shows clearly a short vowel in the original sigmatic form **-quat-si* (: *quatiō*; no perfectum is found in the simplex. We are left with *rēxī*, *uēxī*, *tēxī*, *-lēxī*.

Now we can observe in Latin the gradual spread of the *s*-aorist, and its replacement of various older forms. So we have simplex *momordī* *pepercī* *pupugī*, but in composition *praemorsī*, *compersī*, *compunxī*; the reduplicated perfect is replaced by a sigmatic form, since in composition the reduplicating syllable disappears, and the resultant form has no clear morphological mark. But the sigmatic form may also replace an earlier long vowel aorist: we have

¹² F. Solmsen, *Studien zur lateinischen Lautgeschichte* 30, 33 (Strassburg, 1894) suggests that *conquexī* to *conquiniscō* 'squat' has a long root vowel, and he is followed by Sommer, *Handbuch* 554, as well as Leumann-Hofmann, *Lat. Gram.*⁵ 333. But *conquexī* is attested only once in the texts (Pomponius Atell. 171), and the peculiar formation and clearly familiar, almost vulgar character of the verb makes it unlikely that it continues anything of Indo-European date. Since the long vowel is pure hypothesis, I prefer to discount the word entirely.

emō : *ēmī*, but *dēmō* : *dēmpsī*, and other forms in composition with preverb in final vowel. The same explanation accounts for *intellēxī*. This form represents simply the suffixation of *-s-* in composition to the historically older perfectum form *lēgī*, with a Latin long-vowel root perfectum. We have, in fact, the older *intellēgit* still preserved as an archaism in Lucretius 6.17. This sigmatic form spread in Latin in this verb ; beside regular *ēlēgī* we have epigraphic *elēxi*, and at a later date this *-s-* spreads also to the simplex : *lexerit* insc., and cf. Ital. *lesse*.¹³ The form *-lēxī* thus has no relevance to Indo-European ; it is simply built on *lēgī*, with the original point of expansion in verbal composition.

The same explanation accounts for *rēxī*, as can be shown from the evidence of the texts themselves. The uncompound perfectum form *rēxī* is extremely rare in Latin of the republican period ; the infectum *regō* alone is found in common usage. Plautus, Terence, Ennius, Lucretius, Caesar, and Catullus have only forms of the infectum ; in Cicero there are only two occurrences of *rēxī*, as against 80 of *regō* ; the same is even true of Vergil, who has a single instance of *rēxī* beside some twenty of *regō*. This would suggest that *regō* had only a durative sense in earlier Latin ; where it was necessary to form a preterite (= tense of past time) the imperfect *regēbam* alone was used. The uncompound perfectum *rēxī*, far from continuing an inherited Indo-European sigmatic aorist thus simply did not exist in early Latin ; it is a neologism introduced only at the end of the republican period. In composition, however, this situation did not exist ; on the perfectivizing function of preverbs in Latin compare Meillet-Vendryes, *Traité* 301-3. We expect forms of the perfectum in compounds of *regō*, and it is from the compounded forms that the simplex *rēxī* was subsequently created.

We have seen that the point of generalization of the sigmatic form *-lēxī* was in composition, where it ousted the older root form *-lēgī*. The same situation recurs in the case

¹³ See Meillet-Vendryes, *Traité* 272.

of *-rēxi*. On the testimony of Festus, Livius Andronicus—our oldest Latin author—used the perfectum *surēgit* for *surrēxit* (p. 380, 32 ed. Lindsay). This form has been curiously neglected or misinterpreted by Latin scholars : Ernout-Meillet, *Dict.* s.v. *regō*, call it an analogical creation, as does Sommer, *Handbuch* 571 ; Walde-Hofmann, *Lat. etym. Wb.* s.v. *surgō*, simply ignore its existence. Yet it is unthinkable that a perfectum *-rēxi* of the productive sigmatic type should be replaced by a totally unproductive type *-rēgi*. It is equally unlikely that Livius, who is very careful and indeed archaizing in his Latin, would have used a neologism. The situation is precisely the reverse ; the non-productive *-rēgi* was replaced by *-rēxi*, by the simple addition of the productive morpheme *-s-* to the base *-rēg-*. The form *(su)-rēgit* has equal claim to authentic antiquity with *(intel)-lēgit* of Lucretius. The new form *-rēxi* was generalized in compounded forms, replacing *-rēgi*, and finally, only as late as Cicero, was extended to the uncompounded form.

We may demonstrate the spread of *-rēxi* in the historical period itself, as the following tables show. I have listed the number of occurrences of the infectum (stem *reg-*) and perfectum (stem *rēx-*) of *regō* and compounds in Plautus and Cicero : a distance in time of roughly 150 years.

		I	P
Plautus :	<i>regō</i>	1	—
	<i>corrigō</i>	2	—
	<i>pergō</i>	67	—
	<i>porrigō</i>	3	1
	<i>surgō</i>	14	1
Cicero :	<i>regō</i>	80	2
	<i>corrigō</i>	40	7
	<i>dirigō</i>	17	4
	<i>ērigō</i>	25	11
	<i>pergō</i>	46	8
	<i>porrigō</i>	8	6
	<i>surgō</i>	8	22

The direction of the trend is too obvious to need comment. We may confidently assume that Latin *rēxi* is simply abstracted from the compounded *-rēxi*, and that *-rēxi* itself replaced the earlier *-rēgi*. Hence *rēxi* has no value whatsoever in determining the vocalism of the sigmatic aorist in Indo-European ; it simply repeats the long vowel of *-rēgi*.

Thus of the five original Latin sigmatic perfects with long root vowel, three have been demonstrated to be of Latin origin, and a fortiori not inherited from Indo-European. It is *prima facie* unlikely that a supposed morphophonemic process of Indo-European date, the lengthened grade *ē* of the sigmatic aorist, would be continued in Latin by two forms alone, while over a dozen forms (v. supra) contradict the rules. The forms *tēxi* and *uēxi* are to be otherwise accounted for.

The evidence of the texts in early Latin suggests, in fact, that *tēxi* has the same origin as *rēxi* : generalization of a sigmatic form from composition, where it had replaced an earlier long vowel perfect in *-ē-*. The perfectum *tēxi* of the uncompounded verb does not occur in the republican period before Lucretius (who has one example) whereas Plautus has four instances of the infectum *tegō*. In the compounds, Plautus has infectum forms of *dētegō*, *obtegō*, and *pertegō* but only the single perfectum *dētēxit* (Most. 140, 163). It is only in Caesar and Cicero that *tēxit* in the simplex and in compounds appears frequently. In the case of *regō* the original perfectum form *-rēgit* was actually attested in Livius ; we have no attestation of a **(-)tēgi*. But the existence of the pairs *legō* : *lēgi*, *regō* : *(-)rēgi*, makes highly plausible the rhyming pair *tegō* : **(-)tēgi* ; these are the only three verbs in the Latin language of the structure *Ceg-*. The previous existence of a long vowel perfect stem **tēg-* appears even more likely in view of the fact that the stem *tēg-* occurs also in a nominal derivative ; *tēgula* : **tēgi* exactly parallels *rēgula* : *-rēgi*. Compare also

-rēgī : rēx = lēgī : lēx,¹⁴ as well as *sēdī : sēd-ēs*, for the coexistence of long vowel forms in the perfectum and the nominal system. There is one further indication of the parallelism of these three verbs: the long vowel in the *to*-participle, which arises from a Latin morphophonemic lengthening of *-e-* and *-a-* to *-ē-* and *-ā-* before stem final voiced stop + suffix *-to*.¹⁵ So we have *agō : āctus, frangō : frāctus, cadō : cāsus*, and the three rhyming forms *regō : rēctus, legō : lēctus, tegō : tēctus*. It should be noted at the outset that the analogy of the long vowel participle alone is insufficient to explain the long vowel sigmatic perfect, since both *trāxī* and *uēxī* have short vowel participles *trāctus* (cf. *dērectāre*) and *uēctus* (so explicitly Aulus Gellius, Noct. Att. 9. 6). Ernout has also suggested (*Morphologie* 315) that the vowel lengthening in all these *s*-perfects might have the same phonological (actually morphophonemic) basis as in *lēctus, rēctus, tēctus*: stem final voiced stop + morpheme initial *-s-* being treated like stem final voiced stop + morpheme initial *-t-*. But this is likewise contradicted by *trāxī* and *uēxī*, since the stem final in Italic times was neither voiced nor a stop, but a voiceless velar fricative /x/. The Italic stems **trax-*, **wex-* reflect **tragh-*, **wegh-*, and in such cases this rule does not operate; compare *lectum* 'bed' < **lex-to-*, IE **legh-* as in Gk. λέχος. These long vowel sigmatic perfects thus cannot be of phonetic origin. They must result from 'sigmatization' of older long vowel root perfects. We may tabulate the parallelism in formations from these three verbs:

<i>regō</i>	<i>rēgula</i>	<i>rēx</i>	<i>rēctus</i>	<i>-rēgī</i>	→	<i>-rēxī</i>
<i>legō</i>		<i>lēx</i>	<i>lēctus</i>	<i>-lēgī</i>	→	<i>-lēxī</i>
<i>tegō</i>	<i>tēgula</i>		<i>tēctus</i>	<i>*-tēgī</i>	→	<i>-tēxī</i> .

The only unattested form is **-tēgī*, but the evident fact

¹⁴ Even if *legō* and *lēx* were not related in Indo-European, they were clearly so from the synchronic Latin point of view, and treated as such by the Romans themselves. Cf. Cicero, de Legibus 1.6.19: *eamque rem (i.e., lex) illi Graeco putant nomine a suum cuique tribuendo appellatam, ego nostro a legendo*.

¹⁵ See on this especially M. Niedermann, *Phonétique historique du Latin*², 92-96 (Paris, 1945).

that it fills a hole in the pattern makes its previous existence extremely likely. This view is not new. In Stolz-Schmalz, *Lateinische Grammatik*², p. 370 (1890), the same derivation is set forth: 'rēxī, tēxī < *rēgī, *tēgī, cf. lēxī < lēgī.' But the case was not adequately stated for this perfectly correct explanation, and it was subsequently given up in the revision of the *Lateinische Grammatik* by Leumann-Hofmann.

The long vowel root perfectum is a Latin innovation, as has been convincingly shown by Benveniste, *Arch. Ling.* 1.16-19 (1949), and Kuryłowicz, *BPTJ* 10.46 (1950). For a bibliography of other treatments, see the forthcoming monograph of Warren Cowgill on the Indo-European long-vowel preterites. Cowgill's own view, that the long root vowel arises from contamination of the reduplicated perfect with the sigmatic aorist in long vowel, must itself be rejected, since we can show here that the sigmatic aorist did not have a long-vowel in Indo-European. The coincidence of *ēmī* < **H₁e-H₁m*¹⁶ and *sēdī* < **se-sd-* created an apparent derivational process of lengthening *em-* → *ēm-*, *sed-* → *sēd-*. This pattern was then analogically propagated further in the system: *leg-* → *lēg-*, as assumed by both Benveniste and Kuryłowicz. It was simply the incorrect appreciation of the attested form *surēgit* which kept *reg-* → *rēg-* from figuring here previously. We may now add the third instance of this analogical morphophonemic process in prehistoric Latin, *teg-* → **tēg-* to the list, on the clear evidence for parallel patterning of these three verbs, unique in their structure *Ceg-*. The chronologically later form *tēxī* was subsequently formed in compound verbs, by the productive suffixation of *-s-*; the long vowel of *tēxī* simply repeats that of **tēgī*, and can have no Indo-European origin. The form *tēxī* was later introduced in the simplex, uncompound verb; but this is only well within the historical period.

There remains *uēxī*, a cornerstone of the threefold equation *uēxī* = *avākṣam* = *vēsū*, supposed to establish the

¹⁶ Alternatively, from **e-em-* at a later stage, if one wishes to avoid a laryngeal formulation.

Indo-European antiquity of lengthened $\bar{e}$ -grade in the sigmatic aorist. The pattern of the attestations in the texts observable in the case of $r\bar{e}x\bar{i}$ and $t\bar{e}x\bar{i}$ does not recur with $u\bar{e}x\bar{i}$; in Plautus the perfectum of the uncompounded verb is well represented, in roughly equal proportion to the instances of infectum and perfectum of the compounds *aduehō*, *āuehō*, *dēuehō*, *inuehō*, *reuehō*. The earliest attestation of the perfectum would appear to be in Naevius (*uexerant* 53 Marmorale). The root does not appear to have been in any sense restricted to an imperfective aspect in Latin. We may not suppose the previous existence of a $*-u\bar{e}h\bar{i} > u\bar{e}x\bar{i}$ in composition and replacing the simplex. The explanation must lie elsewhere.

That explanation lies in the nature of the root final consonant of the verb stem, which in Italic was the velar fricative $[x]$. We have seen already that it is universally recognized that the long vowel $tr\bar{a}x\bar{i}$ is analogical in origin. But *trahō* and *uehō* are the only two verb stems in Latin where the stem final consonant is the Italic voiceless velar fricative $[x]$ (henceforth written h , to avoid confusion with $x = [ks]$): $*trah-$, $*ueh-$. The two pattern exactly alike, and we may expect the formation by each of the productive sigmatic aorist; the sigmatic formation is inherited in $*wegh-$. For the case of $*tragh-$ see below. We would have then the following forms by the regular phononological treatment of Latin:

$*trah-$	$*trah-s-$	$*trah-to-$	$\rightarrow$	$trah-$	$*tr\bar{a}x-$	<i>tracto-</i>
$*ueh-$	$*ueh-s-$	$*ueh-s-$	$\rightarrow$	$ueh-$	$*u\bar{e}x-$	<i>ucto-</i>

Compare:

$*lak-$	$*lak-s-$	$*lak-to-$	$\rightarrow$	$(-lici\bar{o} \quad -l\bar{e}x\bar{i} \quad -lectus)$
$*spek-$	$*spek-s-$	$*spek-to-$	$\rightarrow$	$spec- \quad sp\bar{e}x- \quad spectro-$

The participle in *-to-* is an old formation of Indo-European date; only its role as a finite passive in the conjugation of the perfectum is an Italic innovation. But the sigmatic

perfect is the new and highly productive formation, particularly in verbal compounds. We may contrast the roots in final voiced stop with the above type :

* <i>reg-</i>	* <i>rĕg-</i>	* <i>reg-to-</i>	→	<i>reg-</i>	(-) <i>rĕg-</i>	<i>rĕcto-</i>
* <i>tĕg-</i>	* <i>tĕg-</i>	* <i>tĕg-to-</i>	→	<i>tĕg-</i>	* <i>tĕg-</i>	<i>tĕcto-</i>

but in composition, with the new sigmatic perfectum,

* <i>reg-</i>	* <i>rĕg-s-</i>	* <i>reg-to-</i>	→	<i>reg-</i>	<i>rĕx-</i>	<i>rĕcto-</i>
* <i>tĕg-</i>	* <i>tĕg-s-</i>	* <i>tĕg-to-</i>	→	<i>tĕg-</i>	<i>tĕx-</i>	<i>tĕcto-</i>

which was subsequently extended to the simplex. The two roots *trah-* and *ueh-* had a morphophonemic alternation of the root final consonant, *-h-* → *-k-s-*,¹⁷ in the sigmatic perfect. This agreed with the roots in final voiced stop, which had the change *-g-* → *-k-s-*, and contrasted with those in final voiceless stop *-k-* → *-k-s-*, with no morphophonemic change. The result of this pattern was that the vowel length of *rĕx-*, *tĕx-* (from *rĕg-*, **tĕg-*) was reinterpreted as an accessory mark, *-g-* → *-k-s* + *length*, and this was extended to the other case of consonant alternation : *-h-* → *-k-s-* + *length*. Hence the replacément

* <i>trăxi</i>	→	<i>trăxi</i>
* <i>uĕxi</i>	→	<i>uĕxi</i>

occurred in the new and productive category of the sigmatic perfectum ; the older, inherited forms in *-to-*, *tractus* and *uctus*, were not affected.

The recent character of *trăxi* has been universally assumed by scholars heretofore. It has only been necessary here to show that *uĕxi* results from the same innovation in Latin, by an analysis of the analogical process involved. This view is likewise not new. Brugmann in the first edition (1892) of his *Grundriss* 2.2.1170 gives the equation Skt. *avākṣam* : OCS *věšŭ*, and states quite rightly that equation of Lat. *uĕxi* is 'zweifelhaft' ; but he did not state the reasons for this view, and subsequently, likewise without justification, gave it up (*Grdr.*² 2.3.393).

¹⁷ The creation of the sigmatic perfect antedates the passage of intervocalic *-h-* to zero ; otherwise there is no way of accounting for the stem final velar before *-s-*, *-t-*.

We have considered up to this point only the internal, purely Latin evidence for the lateness of the sigmatic perfects which exhibit a long root vowel. That evidence points unequivocally to the conclusion that these forms are not directly inherited from Indo-European; in other words, that there is no evidence in Latin that the sigmatic aorist was characterized by a long root vowel $\bar{e}$. This conclusion may be supported by consideration of the comparative evidence.

In the foregoing discussion it was suggested that the stems *reg-*, *leg-*, *teg-* inherited no perfectum form from Indo-European, and that the long vowel stems *rēg-*, *lēg-*, **tēg-* were first formed analogically in Latin itself. If we look at cognate forms of these three verbs in older Indo-European languages, it appears that only the present stem is well attested. In the Rig Veda we have the presents *ṛjyate*, *ṛñjāte*, and the anomalous *irajyāti*,¹⁸ but no aorist is attested; the only occurrence of a perfect is the hapax *ānrjūh* in the Atharva Veda, which is clearly an innovation of Sanskrit by the anomalous reduplication. The only old aorist is Homeric *ῥεξα*; but Greek *ῥέγω* has only the meaning 'reach, stretch out', and not the additional acceptance 'rule, guide, lead' of Latin *regō* and the Sanskrit forms. Since the sigmatic form is the productive aorist mark in Greek, the existence of *ῥεξα* has little independent value.

The root **leg-* is not found as a verb in Indo-Iranian. In Greek, the aorist middle *λέξατο* occurs in Homer, but it coexists with the athematic aorist or imperfect *λέκτο*, just as *δέκτο* and *δέξατο* exist side by side in Homer, and did so since Mycenaean times: *de-ko-to* ~ *de-ka-sa-to*. The sigmatic form is the younger of the two, and it is likely to have been formed only within the Common Greek period.

¹⁸ The initial *i-* is quite possibly a laryngeal reflex, and to be related to the absence of initial *r-* in Hittite. For a different explanation, see Brugmann, *IF* 32.58-63 (1913). The Vedic nasal infix *ṛñjāte* presupposes an initial lost consonant on structural grounds: **Hṛ-n-eg-/Hṛ-n-g-* parallel to **wr-n-eg-/wr-n-g-* (*vrñakti/vrñjāte*).

Of the root **(s)teg-*, Indo-Iranian agrees with Celtic and Germanic in attesting only an apparent iterative formation **(s)tog-eye-* in Skt. *sthagayati*, Old Irish *tuigithir*, Old High German *decchen*, Old Norse *þekja*. But the *-g-* of the Sanskrit (post Vedic) form must be secondary, as Meillet has pointed out;¹⁹ the formation is more likely to be simply a denominative of an *o*-stem noun **sthaga-*. The verbal noun of the Old Irish verb is *tuige* < **tog-yā*, and the verb is most simply taken as a denominative as well. Only Greek and Latin afford evidence for a verb stem **(s)teg-*, Gk. *στέγω*; but this verb in Greek is used only in the present stem in earlier writers (Liddell-Scott-Jones s.v.), and the aorist *ἔστρεξα* does not appear before Polybius. It is thus likely that only *teg-* was inherited in Latin, and that the formation of **tēgī* in the perfectum filled out and completed the paradigm in Italic times.

The only verb in the list with a probable inherited aorist is *uēxi*, beside Vedic *avākṣam*; but the form was inherited with a short vowel, lengthened only in Italic or Latin times. The closest cognate is thus Cypriote *εφεξε*, which likewise shows a short root vowel.

As we have seen above, the verb stem **tragh-* is confined to Latin. Celtic shows only nominal forms, but Gaulish *uer-tragos* is a clearly deverbative formation, and Celtic at some state probably did have a verb **trag-*. In Italic and Celtic (and Germanic as well), a verb with root vocalism *a* tends to form a reduplicated perfect. We may compare Latin

<i>cadō</i>	<i>cecidī</i>
<i>canō</i>	<i>cecini</i>
<i>caedō</i>	<i>cecidi</i>
<i>tangō</i>	<i>tetigi</i>
<i>pangō</i>	<i>pepigi</i>
<i>parcō</i>	<i>peperci</i>
<i>pariō</i>	<i>peperi</i> (Fal. <i>peparai</i>).

¹⁹ Ernout-Meillet, *Dict. étym. lat.* s.v. *tegō*.

From Celtic we have Old Irish:

<i>braigid</i>	'farts'	<i>bebrag-</i>
<i>claidid</i>	'digs'	<i>cechlad-</i>
<i>canid</i>	'sings'	<i>cechan-</i>
<i>maidid</i>	'breaks'	<i>memad-</i>

The hesitation *pepigī* / *pēgī* exactly parallels that of Praenestine *fhefhaked* / Lat. *fēcī*. Hence it is plausible that beside Latin *frēgī* there once existed a reduplicated form. This is confirmed by the existence of the cognate Celtic *bebrag-* 'break wind' < **bhe-bhrag-*. Latin has replaced the reduplicating type in *-a-* verbs with initial consonant cluster, but they appear in Celtic.

In Italic and Celtic alike the reduplicating syllable is lost in verbal composition. In some cases the root syllable was preserved without change, as in *oc-cidī*, *oc-cidī*, *con-tigī*, *rep-perī*²⁰ < **kad-*, **kaid-*, **tag-*, **par-*; in other cases the root syllable was suffixed by a productive mark of the perfect, as in *oc-cinui* or *com-persī* < **kan-ui*, **park-sī* (a sigmatic form).

From the observations of the two preceding paragraphs we can state that the perfect of a root **trah-* < **tragh-* in Italic times would have been **tetrah-*, in composition **trah-*. The reduplicated form would be eliminated in the general loss of reduplicated *-a-* roots with initial consonant cluster, and the form proper to composition generalized in the simplex. This form **trah-* then received, or had received already in composition, the suffix *-s-*, the productive sigmatic mark of perfectum, just as *com-persī* < **park-sī*, and it was this form **trah-s-* / *-trah-s-* (> **trax-* / *-trax-*) which subsequently underwent lengthening to *trāx-*, along with **weh-s-* (*wex-*) > *uěx-*.

²⁰ This and similar forms *rec-cidī*, *ret-tulī*, *ret-tudī* do not contain a syncopated reduplication syllable, but the preverb *red-* as in *red-imō*, *red-eō*. The present is scanned *reccidere* like *reccidī* (and so written by editors) in, e.g., Lucretius 1.857, 1063, 5.280, to cite only a few of numerous instances. See Meillet, *Mélanges Havet* 273-7 (Paris, 1909), against Leumann-Hofmann, *Lat. Gr.*⁵ 92 and the bibliography given there. (The latter do not seem to know Meillet's study.)

The conclusion remains the same: LATIN INHERITED THE SIGMATIC AORIST FORMATION FROM LATE INDO-EUROPEAN WITH A SHORT ROOT VOWEL. Some of the sigmatic perfects of Latin appear with long root vowel, but these are without exception due to Italic and Latin innovations.

The elimination of Latin from the languages showing inherited lengthened grade in the sigmatic aorist is enough to raise some doubts as to the nature of the Slavic evidence, which has been universally regarded as showing an inherited long vowel.

Since the end of the nineteenth century, it has been customary to give the threefold equation Skt. *avākṣam* : OCS *věšŭ* : Lat. *uēxi*. Brugmann in the first edition of his *Grundriss* rejected the introduction of Latin *uēxi*; but Hirt in 1900 (*Der indogermanische Ablaut* 185) put the three on a par, and in the second edition of the *Grundriss* in 1913, Brugmann had accepted all three (2.3.393). Since that time this threefold equation has been ubiquitously accepted as paradigmatic for the sigmatic aorist with Indo-European long vowel. We have seen in the preceding paragraphs that Latin *uēxi* must be rejected, since it is built on **uēxi*. This leaves only the equation *avākṣam* : *věšŭ* to establish an IE **wēgh-s-*. This equation itself however cannot stand; for Old Church Slavonic *věšŭ* from *vezq* is a ghost word. No such form exists in Old Church Slavonic, or in any later Church Slavonic texts. The aorist *věšŭ*, wherever it occurs in Slavic texts, is always from *vedq* 'lead' or its compounds, reflecting IE **wedh-*.²¹

A total of seven sigmatic aorists are attested in Old Church Slavonic, which show lengthened grade (the forms

²¹ See Horace G. Lunt, *Old Church Slavonic Grammar* 2 91-2 (1959) for an exhaustive list of all the non-productive aorist forms found in Old Church Slavonic. For these and the other forms found in later manuscripts, see F. Miklosich, *Beiträge zur altslovenischen Grammatik. SbAW Wien* 81.110-113 (1876). The later manuscripts simply repeat the same lexical items from Old Church Slavonic; cf. W. Vondrák, *Vergleichende slavische grammatik* 2 2.125 (1928) on the *s*-forms: 'Dieser Aorist kann nur im Altkirchenslavischen belegt werden.' The only properly Slavic linguistic work to quote a *věšŭ* < *vezq* is Meillet-Vaillant, *Le slave commun* 2 240, where the source of the form must be a work such as Brugmann's *Grundriss*.

are given first in the present stem, identical in these forms with Lunt's basic stem, then the aorist stem):

<i>nes-</i>	<i>něs-</i>
<i>ved-</i>	<i>věs-</i>
<i>greb-</i>	<i>grěs-</i>
<i>rek-</i>	<i>rěx-</i>
<i>tek-</i>	<i>těx-</i>
<i>žeg-</i>	<i>žax-</i>
<i>bod-</i>	<i>bas-</i>

As in the case of Latin, Greek, and Celtic, there is a more extensive series of forms from roots of the structure *TER-*, *TERT-* suffixed by *-s-* in the aorist. Slavic would be the only language with a sigmatic aorist where the original putative long vowel in a tautosyllabic diphthong would have left an accentuational reflex. But it is impossible to tell anything from the intonation of the modern South Slavic languages (Serbo-Croatian, Bulgarian, and Sorbian alone preserve the Common Slavic aorist), since in these languages the intonation in all cases simply repeats that of the infinitive, and has no independent value.²² Aorists of this structure in Old Church Slavonic are:

<i>bljud-</i>	<i>bljus-</i>	(* <i>-eu-</i>)
<i>lek-</i>	<i>les-</i>	(* <i>-en-</i>)
<i>tres-</i>	<i>tres-</i>	(, ,)
<i>met-</i>	<i>mes-</i>	(, ,)
<i>vlěk-</i>	<i>vlěx-</i>	(<i>-el-</i> > <i>-lě-</i>).

These five show a simple full grade (*-e-*) root in both present and aorist, and there are no grounds for assuming anything else. To this group we may add another, where the present stem shows Slavic zero-grade, beside full grade in the aorist.

<i>cvīt-</i>	<i>cvis-</i>	(* <i>-ei-</i>)
<i>čīt-</i>	<i>čis-</i>	(, ,)
<i>klīn-</i>	<i>kles-</i>	(* <i>-en-</i>)
<i>pīn-</i>	<i>pes-</i>	(, ,)
<i>čīn-</i>	<i>ces-</i>	(, ,)
<i>īm-</i>	<i>es-</i>	(, ,)

²² See C. S. Stang, *Slavonic Accentuation* 128 (Oslo, 1957).

and with $rě/lě < er/el$,

<i>mlž-</i>	<i>mlēs-</i>	(* <i>-el-</i>)
<i>vrž-</i>	<i>vrēs-</i>	(* <i>-er-</i>)
<i>mř-</i>	<i>mřex-</i>	(„)
<i>stř-</i>	<i>střex-</i>	(„)
<i>žř-</i>	<i>žřex-</i>	(„)

In these forms as well, there can be only hypothetical reasons for postulating lengthened grade in the aorist; the forms themselves show full grade alone.

We have finally a series of sigmatic aorist to roots with Slavic lengthened grade in the present stem as well as the aorist, which therefore show no alteration:

<i>sěk-</i>	<i>sěx-</i>
<i>ěd-</i>	<i>ěs-</i>
<i>pě-</i>	<i>pěx-</i> (historically, $ě < *oi$)
<i>pas-</i>	<i>pas-</i>
<i>rast-</i>	<i>ras-</i>

The problem in these Old Church Slavonic forms is whether the lengthened grade is inherited, or is simply a Slavic innovation. We know that the Balto-Slavic verb shows a number of grammatical categories with lengthened root vowel, which result from purely Balto-Slavic innovations. One may point especially to the iteratives in *-āye-*, the Baltic preterites in *-ē-*, and the long vowel presents of the type **sēd-*. These have been discussed in detail in Kuryłowicz's *Apophonie*, and his arguments need not be repeated here.

The sigmatic aorist is found only in Slavic, not in Baltic. This fact alone is sufficient to suggest that the sigmatic aorist was not inherited as a productive category from Indo-European through the period of Balto-Slavic community. Its development must be of purely Slavic date; the category is Common Slavic, but not common Balto-Slavic. We should expect then that there would be characteristic late features of the morphophonemic alterations observable in the Slavic forms. Such a late feature

is, in fact, observable in the $o : a$ alteration of *bodq* : aor. *basŭ*. This alternation in the sigmatic aorist coexisting with $e : \acute{e}$, is not Indo-European in date : it is only as old as Common Slavic, at the most, Balto-Slavic. For as Kuryłowicz has shown at length in his *Apophonie* (286 ff.), the languages of the Northern group, Germanic and Balto-Slavic, developed an apophonic equivalence $e : o = o : \bar{o}$, where the difference in vowel quantity in $o : \bar{o}$ was treated as morphophonemically equivalent to the qualitative ablaut $e : o$. Subsequently, this process of lengthening was extended to e (yielding $\bar{e}$), and an apophonic situation

e	o
$\bar{e}$	$\bar{o}$

created, in Balto-Slavic times. This lengthening was later extended independently in Baltic and Slavic, with the resultant alternations

Slav. e o ĭ ŭ	=	Letto-Lith. e a i u
$\bar{e}$ a i y		$\bar{e}$ ā ī ū.

This morphophonemic pattern is extremely frequent in the iterative formations in Baltic and Slavic. The independence of these two apophonic systems in Baltic and Slavic may be deduced from the existence in Lithuanian of a number of residual forms reflecting a Baltic system

e	o
$\bar{e}$	$\bar{o}$ (= Lith. <i>uo</i>)

which, after the change $o > a$, was replaced by

e	a
$\bar{e}$	$\bar{a}$ (= Lith. <i>o</i>). ²³

It is this system of alternations which we have in Slavic in the sigmatic aorist, and nothing inherited from Indo-European ; *ved-* : *věs-* = *bod-* : *bas-* = *cvīt-* : *cvis-*. That the latter may contain original full grade **ei* is from the

²³ I have discussed these Baltic apophonic phenomena in *Evidence for Laryngeals* 49-50 (Austin, 1960).

descriptive point of view irrelevant; the alternation is Slavic $\text{ř} : \text{i}$ like Slavic $\text{o} : \text{a}$. In the case of the verb *cvīto* *cvīsti* 'bloom', it is in fact extremely doubtful that there ever was an Indo-European aorist **kweit-s-*, since the verb is a Balto-Slavic innovation, and only feebly represented in Baltic: Latv. *kvitēt* 'shine'. The aorist *cvīs-* was formed only in Common Slavic times, following the Common Slavic apophonic pattern.

In Slavic there is a widespread tendency to contrast the present and aorist systems by a formal apophonic mark, as has been noted by Stang, *Slav. u. balt. Verb*, 90 ff. Such contrast appears notably in forms with an aorist stem in $-\bar{a}$: *pišq* : *pīsa-xŭ*, *plěžq* : *plīza-xŭ*. Stang has stated explicitly 'Die für das slav. System charakteristischen Bildungen sind die Typen *vedq* : *věšŭ*, *mřq* : *mřěxŭ*, *berq* : *bīraxŭ*. Sie zeichnen sich durch das Ablautsunterschied zwischen Praesens und Aorist aus.' These apophonic contrasts represent living, productive Slavic morphophonemic alternations, and the very fact of their productivity indicates that we have to deal with phenomena only as old as Common Slavic. In no wise do they reflect much older apophonic phenomena of Indo-European date, particular those as feebly attested in the verbal system as lengthened grade. For the aorist the original contrast need only be viewed as full-grade/zero grade. Where the present stem shows zero grade, the aorist has full grade (*mřq* : *mřěxŭ* < **mer-*); where the present has full grade in *TeR-* roots, the aorist has zero grade plus suffix $-\bar{a}$ (*berq* : *bīraxŭ*). In the case of the roots of the structure *TeT-*, no zero or reduced grade is possible: the 'lengthened grade' *TěT* + $-s-$ fills the function of the zero grade, and represents a Slavic development. The situation is exactly parallel to that of the 'lengthened grade' iterative formations in $-\bar{a}ye/o-$ independently developed in Latin and in Balto-Slavic, as discussed by Kuryłowicz, *Apophonie* 301 ff. As in the case of the iterative formation, the contrast zero grade : full grade is sufficient to bring about the creation in Slavic times of a new apophony $e : \text{ě}$ in the

s-aorist ; the sigmatic aorist itself was inherited only with full grade vowel : **mer-s-* (*mrěxǔ*) = **ved-s-*. It was the contrast pres. *mřr-e-* : aor. **mer-s-* which was ultimately responsible for the creation of *věd-s-* and the apophonic contrast *ved-e-* : **vĕd-s-* (*věsǔ*), in conformity with the general pattern of morphophonemic relation between present and suffixed aorist in Common Slavic.

In the iterative formation in *-āye/o-* mentioned in the preceding paragraph it is clear that we have to deal with a process of lengthening of Balto-Slavic date : cf. *Apophonie* 303. From the basic *tek-* 'run' we have, for example, OCS *-tĕkati* = Latv. *tĕkāt* 'run, flow'. Now the sigmatic aorist is a purely Slavic formation, not found in Baltic at all. The sum of *s*-aorists inherited from Indo-European must have been extremely small, and of little importance in the Balto-Slavic period. It is only after the separation of Baltic and Slavic that this nucleus of forms achieved productive status in Slavic ; in Baltic they were eliminated entirely. This would suggest that the Balto-Slavic morphonemic alternation *e* : *ē*, as in the Balto-Slavic iterative, was only in Common Slavic times extended to the new sigmatic aorist ; in other words, that the alternation pres. *tek* : aor. *tĕxǔ* is posterior to, and probably even modeled on, the alternation pres. *tek* : iter. *-tĕkajǫ*. In Baltic, where the thematic and sigmatic preterites were replaced largely by the preterite in *-ē-*, the latter as well developed a lengthened grade of purely Baltic date : pres. 1 sg. *geriū*, pret. 3 sg. *gĕrē*.

Indo-Iranian is the one remaining dialect group of the Indo-European languages which shows a characteristic long root vowel for the active sigmatic aorist. The fact that one language group alone in Indo-European shows a given linguistic feature is of course in itself not enough to warrant considering such a feature an innovation of that group. But if the evidence of all the other relevant languages points unequivocally to the conclusion that such a feature did not exist in Indo-European, then it becomes very likely that this feature is, in fact, an innovation in the dialect

where it appears. The likelihood of an innovation is even stronger if it can be shown that the feature in question represents an expanding and productive category in the language under study. Such is the situation of the long-vowel sigmatic aorist in Indo-Iranian.

The distribution of full-grade, lengthened grade, and zero grade in the Indic sigmatic forms in itself indicates that there has been a certain reformation and readjustment of the apophonic forms in the Indo-Iranian and Indic periods. In particular one may point to : (a) the contrast of full grade middle forms to *TER*- roots (*aneṣṭa*) and zero grade middle forms to *TERT*- roots (*aruddha*), both showing lengthened grade actives (*anaīṣam*, *arautsam*) ; (b) the presence of the lengthened grade in singular, dual, and plural of the active, which contrasts strikingly with the athematic present, where the 'strong' grade (whether lengthened or full) is found only in the singular number. Finally, there are such isolated forms as GAv. *asrūždūm*, *māhmaidī*, RV *agasmahi*, *masīya*, *vasīmahi*, JB *atasi*, with zero grades Iran. *sru-*, *ma-*, and Indic *ga-*, *ma-*, *va-*, *ta-* with $a < n$, as well as RV *amatsuh* with irregular full grade.²⁴ Such variation suggests that the observable apophonic situation is not original.

One particular class of forms in Sanskrit shows conclusively that the lengthened grade is late : the *-iṣ-* aorist. We have ample evidence in the *-iṣ-* aorist that only the full (e-) grade is original, e.g., *aviṣ-*, *dhvaniṣ-*, *mathiṣ-*, *śnathiṣ-*, *śramiṣ-*, *sphariṣ-*, all from the Rig Veda.²⁵ Beside these one may point to the forms RV *agrabhīt*, *kramiṣam*, *avadhīt*, *asvanīt*, AV *astariḥ*, *aśarīt*, *anayīt*, which are all descriptively *-iṣ-* aorists. The extension of *ā* at the expense of *a* in these forms is a process observable in the Vedic period ; the mechanism has been described in detail by Kuryłowicz, *loc. cit.* It is evident, then, that the replacement of original basic *a*-vocalism by the new lengthened grade *ā*-vocalism

²⁴ Whitney, § 887 ; Thumb-Hauschild, *Handbuch des Sanskrit* ³ 1.2.305 (Heidelberg, 1959) ; Bartholomae, *Grundriss d. iran. Phil.* 1.1.208.

²⁵ See Kuryłowicz, *Apophonie* 162.

is a new and productive morphophonemic process. We have finally the proof of this in the extension of the lengthened grade even to the root aorist *atārima*, beside the sigmatic *atāriṣma*. From the historical point of view only **a-tari-ma* is regular for this type of root aorist. The lengthened vowel is of late, secondary, morphological provenience, just as is that of all the *-iṣ-* aorists which show a long vowel. The basic type is *TaRiṣ-/TaTiṣ-*.

As we have noted above, following Meillet, the apophonic situation in Indo-Iranian is a clear contradiction of Saussure's morphological stricture of apophony in suffixed forms. It is furthermore the unique example of such a contradiction in the Indo-European verb; as such, a secondary origin, in other words an Indo-Iranian innovation, would be the simplest explanation. In fact, Kuryłowicz in his *Apophonie* (p. 160) has already indicated the solution, when he points out the striking similarity between the apophonic situation in the sigmatic aorist, and that of *vr̥ddhi*.²⁶ Kuryłowicz's explanation of the genesis of the lengthened grade in the sigmatic aorist and that of *vr̥ddhi* are substantially identical: the contrast between variable (full or zero grade) vocalism in the base form (*forme de fondation*), here the present, and the invariant full grade vocalism of the derived form (*forme fondée*), here the sigmatic form. Kuryłowicz in any case assumes that the full grade is original in the Indo-European sigmatic aorist (cf. *Apophonie, loc. cit.*), and that the creation of the lengthened grade is later; in view of the fact that no other language has an inherited lengthened grade in the sigmatic aorist, it is only necessary to suppose that the generation of the new morphological lengthened grade took place only in the Indo-Iranian period, and not in Indo-European itself. The close similarity between the Indo-Iranian sigmatic aorist and *vr̥ddhi* speaks for this as well, since *vr̥ddhi* as a productive morphophonemic process hardly exists outside Indo-Iranian.

²⁶ There is a further parallel to the apophonic behaviour of the sigmatic forms, namely, that of the root nouns: cf. *kūrṣ-/kṛṣ-* (*kr-* 'make') beside *hārd-/hṛd-* 'heart'.

As to the genesis of the lengthened grade proper within the Indo-Iranian period, it is certainly likely that the point of departure was the contrast between variable base and invariant derivative, as Kuryłowicz has suggested. The same was assumed in the case of the Slavic forms discussed above. But it is not necessary to demonstrate the existence of a particular phonological channel for the repeated recreation of a given morphophonemic alternation (as here the lengthened grade) in every successive morphological category where it appears.

This seems to me a methodological fault in Kuryłowicz's *Apophonie*, which frequently leads him to overly ingenious explanations of the channel in the case of individual morphological categories. These are unnecessary, and serve only to undermine the credibility of his reconstruction as a whole. The historical problem is not to explain the genesis of the lengthened grade in all the categories in which it appears, but to isolate the original category in which it appeared, which served as model for all the succeeding instances. Once a morphophonemic alteration is developed in one part of the linguistic system it can and will spread to other parts of the system, if the functional relations are comparable and the resultant phonological situation is permitted in that system. If Indo-Iranian developed, or for that matter inherited, a productive derivational pattern between base form in root vowel *a*, *ar/r*, *ai/i*, etc., and derived form in maximally differentiated ('polarized') *ā*, *ār*, *āi*, etc., in the nominal system; then that derivational pattern is free to repeat itself in unmediated fashion in the verbal system, where there exists a comparable functional relationship between base (*forme de fondation*) and derivate (*forme fondée*). Hence in the sigmatic aorist the Indo-European contrast, inherited into Indo-Iranian,

$$\begin{array}{c} e, er/r, ei/i \\ \hline \downarrow \\ e, er, ei \end{array}$$

was subsequently in Indo-Iranian replaced by the productive morphophonemic pattern of the nominal system:

$$\begin{array}{c} a, ar/r, ai/i \\ \hline \downarrow \bar{a}, \bar{a}r, \bar{a}i \end{array}$$

But the fundamental, inherited vocalism of the sigmatic aorist is full grade.

In exactly such fashion as this we have assumed that in Slavic the inherited (and non-productive) apophonic relation between basic present stem and derived aorist stem

$$\begin{array}{c} e (o) er/\bar{i}r \bar{i}/\bar{i} \dots \\ \hline \downarrow e (o) er \bar{i} \dots \end{array}$$

was replaced directly by the new and productive apophonic relation between present stem and derived iterative

$$\begin{array}{c} e \quad o \\ \hline \downarrow \bar{e} \quad a \end{array}$$

As regards the instances of irregular vocalism of the Indo-Iranian sigmatic aorist such as those noted above, the explanation lies elsewhere. We know that a number of *-iṣ-* aorists owe their origin simply to the sigmatization of original root aorists of *seṭ* roots. This is particularly evident in such forms as *atāriṣma* beside *atārima*; the sequence is aorist stem **tari-* > **tariṣ-*, whence *(a)tāriṣ-* (and *(a)tāri-* by a nonce analogical transformation). We can most easily account for such forms as *asrūždūm*, *agasmahi*, *masiya*, *vasimahi*, *atasi* as sigmatizations of root aorists. In every one of these cases, all forms of the middle, the sigmatic form simply repeats the regular zero grade of the athematic aorist middle on which it is formed. Compare the root aorist forms GAv. *sraotā* (inv.), RV *aganmahi agata*, *amata*, 3 pl. *atnata*, and the Vedic (non-RV) 3 sg. *atata*. In these cases the formation represents the suffixation of *-s-* directly onto the root aorist middle stem: *sru-s-*, *ga-s-*, *va-s-*, *ta-s-*.

The fact that the lengthened grade is found throughout the active of the *s*-aorist (rather than only in the singular, as in the present) has been explained by Kuryłowicz (*Apophonie* 164–5) as imitating the model of the radical and thematic aorists, neither of which show a variable vocalism between singular and dual or middle in the active. This is quite plausible; and since we know that this fixation of vocalism is an Indic innovation, it follows that the rigid sigmatic aorist vocalism in the active indicative is itself an innovation.

There is further the argument from statistics, which can be seen from the comprehensive study of J. Avery, ‘Verb Inflexion in Sanskrit’, *JAOS* 10.219–324 (1880). It does not seem to have been noticed that in the Rig Veda, out of some 180 occurrences of the *s*-aorist active, only 19 occurrences of the indicative are found, and these from 10 roots only.²⁷ Of these 10, *ayāsam ayāsus* must be excluded, since the root vowel is always long, and one, *amatsus* shows ‘irregular’ full grade and no *vr̥ddhi*. Hence we are left with only 15 occurrences of 8 roots forming an active sigmatic aorist with *vr̥ddhi* in the whole of the Rig Veda. It is probably not a coincidence that all these forms are roots of the structure *TR(T)*; the one *s*-aorist active indicative of the structure *TET* does not show the lengthened grade (*amatsus*), and it is possible that the analogical spread of the *vr̥ddhi* form had not yet spread from *TR(T)* to *TET* roots in early Vedic times.

The final argument against the antiquity of the lengthened grade of the sigmatic aorist in Indo-Iranian is the fundamental fact that this lengthened grade is proper only to the active voice, and not the middle. As will appear from the evidence presented in the following chapters, the original locus of diffusion of the sigmatic formations in Indo-European is in the middle voice; the active forms are secondary. We have already seen indications of this, in

²⁷ The form *avrk̥sam* cited by Avery here is a *-sa-* aorist; for the form, see Geldner *Rig Veda* III ad 10.159.5, against Whitney, *Roots*, and Grassman, *Wb*. Further, *avesan* by its ending cannot be a sigmatic aorist. Hence I have reduced his total correspondingly.

the occasional replacement and renewal of root aorists middle by sigmatic forms. This is particularly apparent in the case of the Gathic forms *asrūždūm* beside *sraotā*. We know that the active form is ancient, by comparison with RV *asrot*; we know as well that the zero grade form is historical, by comparison with RV *śrudhi* and Gk. κλῶθι. The Gathic form *asrūždūm* represents an archaic renewal of the aorist middle by a sigmatic form of Indo-Iranian date, which had not yet spread further even in the Rig Veda; it is only in Brāhmaṇa times that the new sigmatic aorist active *asrauṣīt* appears. The basic evidence for the middle voice as the original channel for the penetration of the sigmatic aorist into the system will be considered in the following chapters.

§ 4. THE SIGMATIC AORIST AND THE MIDDLE VOICE.

THE appearance of a generalized *-s-* throughout the middle, contrasting with an athematic (or at any rate asigmatic) formation in the active, has some chances of reflecting an earlier Indo-European distribution since it is mirrored independently in several Indo-European dialects.

The situation in Greek is at first sight just the reverse, where in the Homeric language there exists a series of athematic (from the Greek point of view) aorists middle which have sigmatic active forms: ἄρμενος, ὤρτο, πάλτο, ἄλτο, ἐλέλικτο, λέκτο, ἔλεκτο, ἔμικτο, κατέπηκτο, ἔφθιτο, ἔκτατο, λύμην, ἔμπνυτο, δέκτο, -κτίμενος, ἔχυτο, ἔσσυτο. But the universal athematic character of these forms, maintained by Kuryłowicz,¹ Meillet,² and Chantraine³ has not been completely accepted; for the bibliography one may refer to Schwyzler, *Griechische Grammatik* 1.794 ff., who himself favors sigmatic explanation for some of them. In the case of ἄρμενος and ὤρτο, the existence of an extended present ἀραρίσκω, ὄρνυμι makes a root aorist formation likely. But

¹ *Eos* 32.221 ff. (1929).

² Meillet-Vendryes, *Gramm. Comp. des langues classiques* ² 203.

³ *Grammaire homérique* 1.383 (Paris, 1948).

the present of *πάλτο* is *πάλλω*, a normal *-ye/o-* derivative present which regularly in Greek forms an *s*-aorist in both active (as here *πῆλε*) and middle. The root is in all likelihood set, **pelH-* appearing in Lat. *pellō* < **pel-n-* (for this treatment of set nasal infix bases in Latin compare the identical *sternō*); from the Indo-European point of view an alternation pres. **plH-ye-ti/* aor. mid. **pl-to* is surprising. For Greek one would expect rather *πάλλω*/**ἔπλητο* from such a type; cf. *βάλλω*/**ἔβλητο* (Λ 675). It is clear that the active *s*-aorist is chronologically late, a purely Greek development, since it is simply built of the Greek stem *παλ-*, not on any Indo-European full grade: *πῆλε* < **παλ-σ-ε*. And it is almost certain that this aorist replaced the older reduplicated thematic aorist conserved in the participle *ἄμ-πεπαλὼν*, and etymologically justified by comparison with the Latin reduplicated perfectum *pepulī* < **pepalai*. Where, then, can we situate the form *πάλτο* chronologically? I would suggest that an archaic, athematic sigmatic form **παλ-σ-το* was formed first in the middle, built on the Greek stem *παλ-* and a fortiori within the Greek period, and that it was this form which first furnished a middle beside the active reduplicated aorist **πέπαλον*. At the origin there was in all likelihood no middle form at all beside the active **πέπαλον*; this is indicated by the situation in the Rig-Veda, where the reduplicated aorist in the earliest period is almost completely lacking all the middle forms.⁴ This sigmatic form **παλ-σ-το* then with the renewal (by *-a-*) of the *σ*-endings, was extended to the active as well, *παλ-σα-* > *πῆλ-α-*, and replaced the earlier reduplicated **πέπαλον*. This is simply a part of the general extension of the *s*-aorist. The form **παλστο* is on an earlier chronological level than the active *πῆλα-* < **παλσα-*, since the mark of the aorist is athematic *-σ-* and not 'thematic' *-(σ)α*.⁵ This form **παλστο* then by regular phonological change lost its *-σ-*:

⁴ *Historical Vedic Grammar* (= JAOS 18.203-354) 325-6 (New Haven, 1897).

⁵ For the structurally important notion of the historical sigmatic aorist in Greek being actually an *a*-aorist, see Kuryłowicz, *Apophonie* 272 ff.

παλστο > πάλτο. The form πάλτο however could be maintained as an archaism by virtue of falling together with the athematic type. There are, in fact, some indications that Greek underwent a partial revival of the athematic type in the aorist, in such a fashion as the Baltic presents.

In the case of ἄλλομαι it is necessary to take ἄλτο (ἄλσο, -ἄλμενος) as athematic within Greek, in view of the short vowel subj. ἄλεται A 192, 207 (repeated passage). The long vowel subj. ἄληται Φ 536 at verse end must be a refashioning of ἄλεται, as indicated by the short α-. Yet it is possible that this athematic aorist is a purely Greek development: the Latin perfectum *salvi* is not likely to be old, and Skt. *ucchalati* < **ud-sal-* has no aorist. Hence if the root formed no aorist in Indo-European, the formation within Greek of an athematic aorist ἄλ- may not be much earlier than the formation of a sigmatic aorist ἄλσ- (ἤλατο).

The situation of the renewal of the sigmatic form by thematization might furnish at least the possibility of explaining another of the forms of our list, δέκτο. If this form were taken as originally sigmatic *δεκστο (so, e.g., Schwyzler, *Griech. Gram.* 1.260, 751), then we might regard the equally Homeric δέξατο as the 'new' form, embodying the transformation of the suffix morpheme δεκ-σ-το (athematic) → δεκ-σα-το (thematic), with both forms preserved after the loss of -σ- in *δεκστο, and its consequent falling together with the athematic type. In his *Grammaire homérique*, Chantraine, while admitting (296) that δέκτο has frequently a functional meaning close to that of an aorist, prefers finally (384) to take it along with λέκτο, γέντο, as a present stem to the 3 pl. δέχεται (M 147). Both forms are however attested in Mycenaean, *de-ko-to* and *de-ka-sa-to* (*dekto*, *deksato*) in identical context and identical aorist function (KN L 642, 641),⁶ and as doublets, identical sigmatic origin is certainly plausible. In general one does not expect both an athematic present and an athematic

⁶ Ventris-Chadwick, *Documents in Mycenaean Greek* 317 (Cambridge, 1956). Note also that the form γέντο has been plausibly identified in *o-ze-to* (PY Vn 04), *ibid.* 403.

orist in a biliteral root such as *dek-*; this is one of the factors which induced Chantraine to see in it a present stem. But since the form *δέκτο* is an orist in Mycenaean, I prefer to assume for Greek present *dek-*, aor. (mid.) **dek-s-* remade to *dek-sa-*. The original orist **dek-s-*, when followed by consonantal suffix or desinence, survived by falling together formally with athematic *dek-*. A similar explanation could account for the doublets *λέκτο*, *ἐλέξατο*, i.e., **lek-s-* → **lek-sa-*.

The more common situation in Vedic is one where a root athematic present has an *s*-aorist associated with it: *kṣeti* ~ *kṣeṣat*; *darṣi* ~ *darṣasi*; *parṣi* ~ *parṣati*; *yakṣva* ~ *ayās*; *vaste* ~ *avasīṣta*; *vakṣi* ~ *avākṣit*; *sakṣi* ~ *asākṣi*.⁷ In all likelihood these cases reflect a later suffixation of *-s-* to underline the aoristic value of a biliteral root form originally unmarked as to aspect; in this athematic type there can be no formal distinction between orist and imperfect, whence the frequent ambiguity of such forms in the *Rig-Veda*. This situation doubtless itself reflects an earlier state of affairs in Indo-European when there was no opposition between orist and imperfect.

We have in Greek a precious indication in unambiguous form of the opposition active/middle being implemented by thematic *-e/o-* : *-s-*, as I suggested for (πε-)παλόν : πάλτο. This is the pair Hom. 3 sg. *εὔαδε*, Cret. *ἔφαδε*, aorist of *ἀνδάνω*, beside the adjective *ἄσμενος*, i.e., *Φάσμενος* 'content'. The form is attested three times in Homer, twice after *ν* ἐφελκυστικόν, and once in verse initial position, so restoration of digamma presents no serious difficulties. The form (F)άσμενος must go back to an athematic middle participle **Fad-σ-μενος*, sigmatic beside the thematic aorist *ἔ-Fad-ε* (infin. *ἀδεῖν* Γ 173).⁸ This form has occasioned some controversy; the relevant literature is indicated in Schwyzler, *Griech. Gramm.* 1.749 n. 3, and Frisk, *Griech. etymol. Wb.* s.v. Chantraine, *Gramm. Hom.* p. 384, prefers to regard

⁷ But also root aor, opt. (precative) *sahyās*.

⁸ Compare also the thematic adjective **Fado-* in *ἀδολεσχής*, *ἀδολεσχέω* 'unpleasant chatterer' (both first attested in the 5th cent. comic poet Eupolis, 352-3 Kock) < **ā-Fado-λεσχής*.

it as without sure etymology, which seems overly cautious. Schwyzler, following J. Schmidt, takes ἄσμενος as aor. mid. ppl. of ἥδομαι, Homeric only in the hapax ἥσατο, whereas Frisk neatly straddles the fence by deriving it from ἁνδάνω, ἥδομαι. But the sigmatic aorist middle in Greek has the same vocalism as the base, which excludes ἥδομαι; otherwise we should expect *ἥσμενος from *Fād-σ-μενος. The base can only be Fād- in ἁνδάνω, ἔφαδε, and the distribution of thematic and sigmatic formants appears now as reflecting a more archaic linguistic stratum in Greek.

These Greek forms we have examined are evidently only the debris of an earlier, more extensive distributional scheme. They are isolated remnants, preserved in their original shape only in the absence of any synchronic derivational rapport with cognate forms.

Such forms as *παλστο, *Fαδσμενος (presupposing Fαδ-σ-το) can be directly equated, for the form of the ending, with the Venetic verbs *vha.g.s.θo*, *dona.s.to*, stems respectively *fak-donā-*, and also conceivably *la.g.[s.to]*.⁹ From the extremely meagre remains of the Venetic verb one can only say that there seems to be no special correlation between sigmatic and middle forms (if the Venetic ending *-to* is, in fact, functionally a middle ending, which is not certain): cf. *doto* (athematic middle) and *a.træ.e.s.t.* (sigmatic active). But the late date of the Venetic forms relative to Homer and the Rīg Veda¹⁰ would not in any case permit us to give this fact too much weight. It is still perhaps significant that three out of four (four out of five?) of the attested verbs appear to have middle forms.

There exists a certain amount of evidence from Vedic Sanskrit that an *s*-aorist may exist in the middle voice of

⁹ For the restoration see M. Lejeune, *RPh.* 26.198-9, 206 (1952). Lejeune suggests a verb cognate with Lat. *laciō* 'entice', in the meaning 'sibi conciliauit'; but if the restoration is correct I would be more inclined to see a verb ultimately from IE *legh-, in the sense 'laid', despite the vocalism for which we might compare OIr. *laigid* (which forms an *s*-subjunctive, though with *e*-vocalism *less-*). For the ending *-sto* cf. E. Polomé, *MNHMHΣ XAPIN* 2.96 (Wien, 1957).

¹⁰ Though within the Italic tradition some are quite old; *vha.g.s.θo* is probably from the 4th cent. B.C.

verbs which form an athematic or thematic aorist active. This is particularly true of the thematic aorist ; according to Whitney (*Sanskrit Grammar* § 846) most verbs exhibiting this aorist form their middle in -s- or -iṣ-, and there are only a handful of middle forms of the thematic aorist. In general one of the clearest characteristics of the s-aorist in the Veda is the extraordinary rarity of active indicative forms ; we have already seen this in the preceding chapter, à propos of the lengthened grade vocalism. According to the statistics of E. V. Arnold (n. 4 supra) the commonest forms of the s-aorist are augmented middle indicatives, and (thematic) subjunctives. Meillet, in fact, called attention to this fact in his original article (*Mélanges de Saussure* 89), citing it as evidence for the relatively late, intra-dialectal expansion of the s-aorist. Looking at the same phenomenon from a slightly different point of view, we may state that Vedic Sanskrit affords justification for the possible assumption that the original locus of diffusion of the s-aorist was in the middle voice.

This is likewise apparent in the Sanskrit precative, where from the earliest times the active forms are built on the root aorist (*bhū-yās*), but the middle forms are built on the sigmatic aorist, -s-, or -iṣ- (*bhaviṣ-iṣṭa*). In the Rig Veda there are only two precative middle forms from the root aorist, *paḍiṣṭa* and *muciṣṭa*, and none are attested in later texts.¹¹

Kuryłowicz has devoted two studies to the problem of the distribution of formants in the aorist : ' L'aoriste au point de vue formel ' (*Eos* 32.221-7 [1929]), and partially supplementing this, *Indoiranica* 2.¹² His conclusion is that one may assume a partial distribution between active and middle forms as follows :

aor. act	(root) athematic	thematic	sigmatic
aor. mid.		athematic	sigmatic

¹¹ T. Burrow, ' The Sanskrit precative ', *Asiatica* (Festschrift F. Weller), 35-6 (Leipzig, 1954). For the formation of the precative and the implications of Burrow's study, see below, chapter seven.

¹² *Comptes rendus de la Soc. des Sci. et des Let. de Wrocław* 3 (1948).

The relative chronology of these forms runs in descending time scale from left to right. Kuryłowicz would suggest that the repartition thematic active; athematic middle is a 'schéma préhistorique'. But this seems unlikely to reflect anything more than a transient state in Proto-Indo-European; in general one may confidently assume a transference from athematic to thematic or otherwise suffixed formations in Indo-European, and it is well-known that the thematic aorist is an expanding category in the historical period of Vedic Sanskrit: Whitney (§ 847) points out that it is the only form of the aorist made from more verbs in the Atharva Veda than in the Rig Veda.

Kuryłowicz suggests further that the repartition active -e/o- : mid. zero reflects on earlier repartition -e/o- (active sg.) : zero (active pl. and mid.), on the evidence of 'la flexion védique de l'aoriste de *bhū*' (*Indoiranica* 3):

<i>bhuv-am</i>	<i>bhū-ma</i>
<i>bhuv-a-s</i>	<i>bhū-ta</i>
<i>bhuv-a-t</i>	<i>bhuv-an</i>

But in the first place 3 sg. *abhūt* (: *ἔφν*) is surely older than *abhuvāt*; and his 'Vedic' paradigm of the aorist of *bhū-* with singular *abhuv-a-m*, *°a-s*, *°a-t* simply ignores *abhūs*, *abhūt*, and treats as thematic active a 1 sg. *abhuvam* which is attested only in the late 10th book, and which is, in fact, more likely to be an injunctive, as shown by Renou, *Etrennes Benveniste* 66.

The point to be retained is first of all the nearly complete absence of thematic aorists middle; this fact has been noted in the grammar of Sanskrit (Whitney § 856), and Kuryłowicz is surely correct in considering the handful of thematic aorists middle as Indic innovations built according to the proportion them. impf. act. : them. impf. mid. = them. aor. act. : x, e.g., *abharan* : *abharanta* = *avidan* : *avidanta* (AV). In the process of the renewal of the aorist middle by the sigmatic form, it was an athematic form which was replaced.

A more significant aspect of the functional nature of these varying repartitions of the formal expression of the diathesis of voice in the aorist emerges from another of Kuryłowicz's studies : ' Le genre verbal en indo-iranien ', *Rocz. Or.* 6.199-209 (1928). Kuryłowicz shows that already in Vedic, the expression of genera verbi by the desinences alone (active : mediopassive) was almost completely given up. The functional opposition was maintained by the further formal characterization of the one (causative-transitive) or the other (intransitive-passive) by an additional suffix morph ; or looking at it another way, by charging other verbal formations (e.g., iterative, *-nā-*) with the role originally played by the desinences alone. Compare also Kuryłowicz's formulation, *Indoiranica* 1 n. 2. In view of the oppositions of the type *rāmayati* : *ramate* characteristic of the present system in Indic, it is not only legitimate but necessary to look upon the oppositions of voice in the aorist in the same way : caus.-trans. *arīramat*, intrans.-middle *aramsta*. Kuryłowicz distinguishes three types of formal renewal of the oppositions of genera verbi in Indic : (1) the active voice continues to express the causative-transitive value, and the intransitive value is expressed by the present in *-ya-* with middle or active endings ; (2) the causative-transitive value is expressed by the *-aya-* formation, and the intransitive by the active or middle of the root present ; (3) the causative-transitive is expressed by the nasal infix (generally *-nā-* pres.), and the intransitive by the root present middle. Of these the second case is the most common ; the forms fall into two groups, one with active and the other with middle endings in the intransitive present. Since the formal diathesis by means of suffixes is a renewal of an opposition originally marked by the desinences alone (active : middle) it follows that the forms with middle endings in the intransitive represent more faithfully the older situation.

Kuryłowicz has collected 16 presents in the Rig Veda which illustrate this opposition ; 13 of these show a corresponding intransitive aorist. Of these aorists, 11 are

sigmatic, and all but three are sigmatic middle. This represents additional evidence that the locus of diffusion of the *s*-aorist was in the middle voice, functioning as an intransitive.

In terms of his schema reproduced above, Kuryłowicz would isolate the repartition active thematic : middle athematic as an archaic state ; but to do so seems both unnecessary and unjustifiable. The primitive state in the aorist just as in the present was undoubtedly one where 'voice' was distinguished by desinences alone, and the original type was the athematic one. The process of historical development was one of formal renewal of the one or the other opposing member or both, the further differentiation or polarization of the two voices. In the active, the first development was one of the formation of a thematic aorist, associated with an athematic middle ; a development whose initial states are probably of remote antiquity in Proto-Indo-European, whence Kuryłowicz's view of it as 'original'. But it is more likely to be simply one stage in the process. There were simply several possibilities, of which this was one. For an original opposition

athematic active/athematic middle

was renewed in one of the following ways :

1. thematic active/athematic middle,
2. thematic active/sigmatic middle,
3. athematic active/sigmatic middle.

In point of chronology, 2 is probably subsequent to 1, but 3 is not related to 1 ; the significant point is the tendency of *-s-* to appear in the middle, and the fact that it replaces an athematic type. Clear traces of this exist in the zero-grade vocalism of certain old mediopassive sigmatic aorists, of the type RV *avitsi* (contrast later thematic *avidanta* AV), *abhutsi*, Gath. *asrūždūm* ; it is in the athematic type, secondarily suffixed by *-s-*, that the origin of this zero grade must be sought.

§ 5. TOCHARIAN FORMATIONS IN *-s-*.

THE evidence of all the Indo-European languages extant at the time Meillet wrote his study showed clearly that the role of the sigmatic aorist must have been very small in Indo-European itself. It is for this reason hardly surprising that neither of the two distinct dialect groups which have come to light since, Hittite with the other Anatolian languages and the two Tocharian languages, shows evidence for an inherited, fully developed *s*-aorist of the 'classical' type. We may examine first the evidence for an *s*-formant in the Tocharian group. As will appear further below, the evidence for *s*-elements in Tocharian presents some rather striking resemblances to the Hittite evidence for *-s-*, as scholars have noted.¹ Some of these similarities, though, turn out to be more apparent than real.

We have a very clear, though summary, evaluation of the important Tocharian *s*-forms, by V. V. Ivanov in *Toxarskie Jazyki* 29–31 (Moskva, 1959). Ivanov points out first that Tocharian is one of the rare Indo-European language groups to conserve a verbal class of presents in *-s-* (class VIII); in most other languages the *-s-* is simply a radical element. W. Krause² has compared presents of the type Skt. *rakṣati*, Gk. ἀλέξω, ἀέξω, δέψω, ἔψω, all of which show thematic suffix *-se/o-*. Ivanov notes the much more profound comparison between the relation of the verbal formants *-s-* and *-sk-* in the two Tocharian languages on the one hand, and the same two in Luvian and Hittite on the other. He notes the same dialectal coexistence in the archaic group of Lat. *pāscō* with *-sk-* and Hitt. *paḥš-*, OCS *pasq* with *-s-*, beside the unsuffixed Skt. *pā-ti* or Lat. *pā-ūi*. The same relation between *-s-* and *-sk-* morphemes recurs in the nominal system; the Luvian relational suffix *-ašša/i-* (Hieroglyphic *-asa-*), and the relational suffix *-sko/e-* common in Germanic and Balto-Slavic.

¹ So G. S. Lane, 'The formation of the Tocharian subjunctive', *Lang.* 35.161 (1959).

² *Westtocharische Grammatik* I 77 (Heidelberg, 1952); similarly W. Krause-W. Thomas, *Tocharisches Elementarbuch* I 206 (Heidelberg, 1960).

The present formant *-s-* and its parallel *-sk-* have in both Tocharian languages a marked tendency toward causative-transitive function, beside intransitive bases without *-s-* or *-sk-*. This functional specialization of these two suffixes may be safely assumed for Common Tocharian ; but it is an innovation from the Indo-European point of view. The two inherited suffixes *-s-* and *-sk-* were greatly extended in Common Tocharian times, as a formal implementation of the new diathesis of *genus verbi* : the opposition intransitive/transitive. The development and expansion of this functional diathesis represents one of the fundamental innovations of the Common Tocharian verbal system. That the function of these suffixes is to convert an intransitive to a transitive verb is apparent from instances where the base verb is itself transitive. In this case the 'causative' does not differ in meaning from the base verb : base verb *laikanatär* 'washes', causative *lyikšäm* 'id'.³

The secondary nature of the causative-transitive value of the *-s-* and *-sk-* forms was recognized already by Benveniste in 1936, in his study 'Tokharien et indo-européen'.⁴ He points out that the original value appears in cases where there is no opposition to a base form without the suffix *-s-* or *-sk-* : this value he defines as iterative-intensive, on the basis of the Tocharian and cognate forms.

We have other examples in other Indo-European languages of the independent and innovatory development of a causative-transitive function for the morpheme *-s(e/o)-*. Such is, for example, the value of the suffix *-s-*

³ Krause-Thomas, *Toch. Elem.* 174 and 207. It should be noted that the etymology for the verb *lik-* 'wash' given *op. cit.* p. 65, to Latin *liqueō*, is both semantically and morphologically unsatisfactory. Semantically more plausible is connection with IE **neig(w)-* 'wash', which requires only the assumption of an assimilation of *n-* to *l-*, as in Hitt. *lāman* 'name'. Compare also Lat. *pollingō* < **por-ning-*. Morphologically this is likewise preferable, since *lik-* has an athematic present in Tocharian A *liktsi*, which agrees strikingly with the independent evidence for athematic present in the zero-grade presents Gk. *νίζω* and OIr. *nigid*. The Kuchean *-nā-* present *laikanatär* is clearly secondary, by its vocalism, root structure, and suffix ; it may well have replaced an earlier athematic present.

⁴ *Germanen und Indogermanen* (Festschrift H. Hirt) 2.227-240 (Heidelberg, 1936).

in Skt. *bhūṣati* 'strengthen, add power to', beside the unsuffixed base *bhū-*, as has been shown by J. Gonda in his monograph on this verb.⁵ Gonda cites a number of instances of causative-transitive value of *s*-presents, e.g., Skt. *ukṣati* 'besprinkle' : Gk. *ὕγρος* 'wet', or Av. *taxšaiti* 'make run' : *tačaiti* 'run'. All of these are essentially nonce creations. A notable example in the sigmatic aorist is the type of Gk. *ἔστησα*, which reflects the utilization of the new morpheme *-σ-* to supply a functionally new form, the causative-transitive, which had previously not existed for this verb. The older forms are only the intransitive *ἔστημι*, *ἔστη*.

The thematic nature of this present forming suffix *-se/o-* in Tocharian is apparent from the paradigm in Kuchean, where the vowel *e*, the characteristic reflex of IE *o*, appears in those persons where this vowel is canonical : 1 pl. act. *-sem(o)*, mid. *-semt(t)är*, 3 pl. act. *-sem*, mid. *-sentär*. Compare Gk. *-ομεν*, *-ομεθα*, *-ουσι*, *-οντο*. Hence this present formation is not directly comparable with the classical athematic *s*-aorist. The suffix *-se/o-* is thus paradoxically more recent than the *s*-aorist, since it shows a subsequent thematization, *-s-* + *-e/o-*, and more archaic, since this thematization, and the morphologically parallel *-s-* + *-ke/o-*, belongs to a deep layer of comparison, in contrast with the recent *s*-aorist. The *s*-present is, in fact, an archaic category on the basis of its functional and morphological structure ; the thematization may well be quite late, and purely mechanical. We have a good example of the athematic present suffix *-s-* in Skt. *dveṣṭi*, where the *-s-* is isolable by comparison with Gk. **δφει-* in Hom. *δεῖδω* < *δε-δφει-α*.

While the relation of this present type to the sigmatic aorist is somewhat distant, both representing later divergent developments of what was possibly a unitary type, the Tocharian *s*-preterite (class III of both languages) is clearly closely connected with the classical sigmatic aorist, while at the same time presenting a more archaic structure.

⁵ The meaning of Vedic *bhūṣati* (Wageningen, 1939).

It should be noted that the close association of *s*-present and *s*-preterite observable in Tocharian (25 verbs with both in Kuchean) seems to be a purely Tocharian development, possibly arising from a tiny nucleus of inherited forms. One such a form is the root *näk-* ' (act.) destroy, (mid.) perish ' (Kuch. pres. 3 sg. act. *naksäm*, pret. 3 sg. act. *neksa*) where one may compare Lat. *noxā* to show the earlier presence of a radical thematic present form **nekse/o-*. The relation is that of *tegō* to *toga*, and this case represents another example of the rare *τομή* type in Latin, where it is normal for the verb to be not found, as in *rota* beside **rete/o-* in Old Irish *rethid*. Beside this root form **neks-e/o-* in the present, we have an aorist stem **nek-s-*. Another instance would be the root **prek-*, where beside the aorist **prek-s-* (Kuch. *preksa*, Skt. *aprākṣīt*) we have an *s*-present **prk-se/o-* in Kuch. *prekšäm* (with secondary vocalism), which can be directly compared with the *sk*-present of Lat. *poscō*, Skt. *prcchati*. Tocharian would appear to have developed the connection between present stems of the radical type **nekse/o-* and suffixed type **prk-se/o-*, and preterite stems of the type **nek-s-*, **prek-s-*. There is however nothing comparable in any of the other related languages. If *s*-present and *s*-aorist exist in the same verb, the *s*-aorist is generally simply suffixed onto the present stem in *-se/o-*, as in the case of *δέψω*, *ἀλέξω*, besides aorists *ἐδέψησα*, *ἀλέξησα*.

It is relatively easy to see how this should have come about. For the originally equal status of athematic primary and secondary endings in combination with a living suffix morpheme *-s-* was preserved as such only in Celtic; there it is only as an essentially accidental consequence of another transformation, the development of absolute / conjunct flexion. Even in Celtic, this situation existed only in the very oldest stages reconstructible: from *rethid* 'runs', abs. *reiss/cjt. -ré* 'currat' < **ret-s-ti/ret-s-t*. In all the other Indo-European languages (for Hittite, see § 6) the athematic forms in *-s-* have been preserved as a definable verbal class only with secondary endings. Where the primary endings

in combination with *-s-* have been preserved as a class, they have undergone thematization: *-s-ti* → *-s-eti*. From *-s-eti* is then created in some languages a new secondary form *-s-et*, which functions as an imperfect. By this development the connection with the (aorist) athematic forms *-s-t(i)* is totally lost; hence the Greek type ἀλέξω, δέψω, ἀέξω, and the Kuchean class VIII presents. From the Greek point of view, and doubtless that of late Indo-European, the opposition *-s-eti/-s-et* has completely lost any connection with the residual *-s-t*.

Following are typical paradigms of *s*-preterites in both Tocharian languages of the verb 'ask' (Krause-Thomas, *Toch. Elem.* 270):

active

Kuch. sg. 1	<i>prekwa</i>	Toch. (A) sg. 1	<i>prakwā</i>
2	<i>prekasta</i>	2	<i>prakāšt</i>
3	<i>preksa</i>	3	<i>prakās</i>
pl. 1	<i>prekam</i>	pl. 1	<i>prakmās</i>
2	<i>*prekas</i>	2	<i>*prakās (?)</i>
3	<i>prekar</i>	3	<i>prakār</i>

middle

sg. 1	<i>parksamai</i>	sg. 1	<i>präkse</i>
2	<i>parkсатаi</i>	2	<i>präksäte</i>
3	<i>parkсate</i>	3	<i>präksāt</i>
pl. 1	<i>parkсамt(t)e</i>	pl. 1	<i>präksāmät</i>
2	<i>parksat</i>	2	<i>präksāc</i>
3	<i>parkсante</i>	3	<i>präksānt.</i>

It should be noted that the relatively infrequent occurrences of apophony between active and middle in the Tocharian *s*-preterite, as in the paradigms quoted, are not to be explained as reflecting apophonic phenomena of the Indo-European *s*-aorist, but rather of the Indo-European perfect. The same vocalic alternations appear in the direct reflex of the perfect, the athematic subjunctive, e.g., Kuchean 1 sg. act. *kewu* ~ 3 sg. mid. *kutär* 'pour' (IE **gheu-*).⁶

⁶ G. S. Lane, *Lang.* 35.159–60.

As Krause has stated (*loc. cit.*), the vocalism of the Tocharian *s*-preterite shows contamination between the Indo-European *s*-aorist and perfect. The Kuchean alternation *e* : *a* reflects the *o* : *zero* alternation of the Indo-European perfect, both in the *s*-preterite and the athematic subjunctive. This contamination must be a purely Tocharian development, subsequent to the functional coalescence in Proto-Tocharian of the Indo-European aorist/preterite and perfect. To judge from the palatalization in forms such as Kuchean pret. act. 3 sg. *lyautsa-ñ* 'he drove me' beside zero-grade pret. mid. 3 sg. *lyutsāte* 'he went away', the active preterite shows the *e*-grade, where it has not taken over the *o*-vocalism of the perfect. Here I would derive *lyautsa* from IE **leudh-s-*, cognate with Gk. ἤλυθον 'I went'. The coexistence of transitive 'drive, lead' and intransitive 'go' from the same root (in the case of **leudh-* in Tocharian expressed by the diathesis of voice) is common in the Indo-European languages. The root **ag-* is transitive 'drive' in Latin, Greek, Indic, and Old Irish; in Old Norse and Welsh it is intransitive 'go'. Such variation is not confined to Indo-European: the coincidentally homophonous root form *ag-* in Hurrian means 'proceed' when intransitive, but 'guide, lead' when transitive (E. A. Speiser, *Introduction to Hurrian*, 136).

The palatalization **leu-* > Kuch. *lyau-* would be regular, as also suggested by G. S. Lane, *Lang.* 29.284 (1953). We have seen in the previous chapter that it is not legitimate to assume a lengthened grade in the *s*-aorist, i.e., a form **lēudh-s-*. In any case, it would appear that tautosyllabic long diphthongs were shortened in Proto-Tocharian, to judge from Kuchean *mīsa* 'meat' < **myāmsa* : Skt. *māṃsa*, Gk. μῆψος, OIr. *mír*, all with long diphthong; the treatment is identical to that of Kuch. *mīt* 'honey' < **myüt* : Skt. *madhu*.⁷

⁷ The variation *ĩ* is inconsequential, cf. Krause-Thomas, *Toch. Elem.* 39. For the treatment *myä* > *mī* and this reconstruction in general see Ivanov, *Tox. Jaz.* 10.

The fundamental problem is the relation of these Tocharian *s*-preterite forms to the classical sigmatic aorist type. Ivanov in the work cited above (p. 30) has stated that 'the Tocharian languages agree with Hittite not only in the fact that they preserve verbs in *-s-*, but also in the presence in the conjugation of archaic forms of the past tense with an element *-s-*, penetrating into the 3rd and 2nd sing. (and thence to other persons), arising from forms where this *-s-* was a derivational, not an inflexional element. The Tocharian and Hittite forms of the past tense in *-s-* and the cognate forms of the Sanskrit precativ permit us to explain the secondary character of the sigmatic aorist.' The essential correctness of this analysis cannot be doubted; but the precise mechanics of the spread of the *-s-*, and the morphological channel, have still to be explained.

It is clear from an examination of the paradigms given above that we have to do with two problems in the Tocharian *s*-preterite. One is *-s-* as a desinence, or desinential component (in the active), and the other is *-s-* as a true suffix morpheme. The latter is found only in the mediopassive. At the conclusion of the previous chapter it was suggested that the middle voice was the original channel for the expansion of the *s*-aorist into the system. It is only in the middle that the *-s-* occurs as suffix morpheme in the '*s*-preterite', in that position which is canonical for the Indo-European *s*-aorist, immediately after the full grade root.

In the active, it is only in the 3 sg. that *-s-* appears as a derivational element. It is not correct to put the *-s-* of 2 sg. and 2 pl. on a line with the *-s-* of the 3 sg., since the latter is found only in class III, whereas the 2 sg. *-sta* [A *-st*] and 2 pl. *-s* [A *-s*] occur throughout the preterite system. The 2 pl. *-s* recurs in the 2 pl. imperative active of all verbs, irrespective of class, in *-s* or *-so* in Kuchean. For this reason it is best to separate the 2 pl. preterite ending altogether from the *s*-preterite and also from the 2 sg. in *-sta*. Internal reconstruction indicates that the 2 pl. *-s* is an imperative ending in immediate origin. The ending

-sta [A *-št*] has been compared variously with the Hittite ending *-šta* and with Latin *-isti*; I prefer to treat it subsequently, together with the Hittite form. Suffice it here to say that it has no direct connection with the *-s* of the *s*-preterite.

For the active we have only the 3 sg. *-sa* [A *-äs*] as a mark of this class. We may take the Kuchean form, e.g., *preksa*, as basic; the 'Fremdvocal' of the A form *prakäs* is secondary, and the base is **praksā*, as appears from forms with pronominal suffix such as *raksā-m*. The elimination of the consonant cluster in *prakäs* is paralleled by that in *okät* '8' [Kuch. *okt*] < **oktV*.

The ending for the 3 sg. active may be set up as *-sā*. This same sequence *-sā* recurs throughout the middle of the *s*-preterite, and may itself be segmented into *-s-* + *-ā-*, the *-ā-* being the general tense sign of the preterite. On this basis we may assume that the 3 sg. active has, in fact, only a zero ending as personal desinence, and that the *-sā* represents originally a sequence of tense morphemes. The fact that the *-sā-* runs through the middle, but is found only in the 3 sg. in the active, would suggest that its original locus was the middle voice, where it was generalized, and that the spread to the active voice is a later development. Since we know that the Tocharian preterite represents a formal and functional conflation of Indo-European perfect and aorist, it is not surprising that the 3 sg. active appears with a renewed, composite form.

The 3 sg. active in *-sā* must represent the first point in the spread of this suffix from the mediopassive to the active. Beside the mediopassive forms, of the structure *root* + *sā* + *desinence*, the 3 sg. active was formed originally with the structure *root* + *sā* + *zero ending*.⁸ On the basis of the middle, e.g., **nek-sā-to* (Kuch. *neksate*, but with *-e-* < **-o-*) was created a 3 sg. active **nek-sā-ø* (Kuch. *neksa*), after the productive pattern *mid. -āte* : *act. -ā-ø*.

⁸ Alternatively we may assume the suffixation of IE *-t* in the 3 sg. active, if one assumes final consonants were not lost by this time in Common Tocharian.

(e.g., Kuch. *paiykāte* : *paiyka* to *paik-* 'write'). This of course need hardly surprise us. The number of languages showing a 3 sg. zero ending is extraordinarily large, and we shall have occasion to observe in Part II of this study how Common Celtic created a new 3 sg. zero ending throughout the aorist, with very significant repercussions in the whole verbal system.

Since we know that the *-s-* element has been consistently associated with the aorist (in the classical manifestation of the sigmatic aorist), it seems reasonable to conclude that it belonged there from the earliest times. We observe, on the other hand, the vocalism of the Kuchean *s*-preterite showing consistently the characteristic *o*-grade active and zero grade middle of the Indo-European perfect, as well as certain characteristic perfect endings. It seems for this reason not implausible to suggest that an original 3 sg. active aorist in *-sā* with Indo-European *e*-vocalism was incorporated into a paradigm continuing an Indo-European perfect with *o*-vocalism. The original aorist form then adopted the vocalism of the perfect, thus reestablishing a unitary paradigm. So, for example, from **nek-* a **nek-sā* beside a perfect stem **nok-* was remade to **nok-sā*, appearing in Kuchean as *neksa*.

The process sketched above will account for the element *-sā* in the 3 sg. active; we have still, however, to explain this element in its earlier locus, the middle voice. It would appear, in effect, that the *-sā* of the 3 sg. active represents a recreation of a much earlier 3 sg. form in simple *-s-* from which the middle paradigm itself was analogically created. The *-ā-* is simply the general mark of the preterite in Tocharian (both languages), and is found throughout classes I, II, IV, and V. Its spread to part of class III is only a predictable expansion, a Suffixhäufung with the effect of completely regularizing and making uniform the conjugation of the preterite. The earlier stage is that of a mediopassive or intransitive aorist stem in suffixed *-s-* of the type **neks-*, **preks-*, opposed to an active or transitive aorist (and/or reflex of the perfect) without the element *-s-*.

There is other evidence for this assumed distribution, from the general organization of the tenses and moods of these verbs. In Kuchean there are seven verbs with *e*-subjunctive. The *e*-subjunctive (like the *e*-present) shows only middle, intransitive forms, e.g., *nketär* 'will perish' from *näk*-. Now beside these middle intransitive subjunctives in *-e*-, *näk*- shows an active transitive athematic subjunctive *nakäm*, and several others show nonfinite forms of the athematic type.⁹ It is doubtless no coincidence that all these verbs with *e*-subjunctive show an *s*-preterite as well. As Lane has stated (*loc. cit.*): 'the remnants of a pattern seem thus to be emerging: *s*-present, athematic subjunctive originally only active; *e*-subjunctive, only middle, *s*-preterite.' That the *s*-preterite is originally proper to the intransitive middle dovetails neatly with the *e*-subjunctive. All the verbs which show *s*-preterite and *e*-subjunctive admit of an intransitive use, and in all cases the intransitive is attested early in other cognate languages. It is curious to note that the number with obvious Indo-European etymology is extraordinarily high for any Tocharian form class: *näk*- 'perish' (Lat. *nex*), *käs*- 'go out, be extinguished' (OCS *gas-nōti*), *näm*- 'bend' (Gr. *νέμω*), *päk*- 'cook, ripen' (Lat. *coquō*), *tsäk*- 'burn' (Lith. *degù*), and *kän*- 'come to pass', if from IE **gen-* (cf. Gr. *ἐγένετο*).¹⁰

It was suggested above that the association of *s*-present and *s*-preterite was a Tocharian innovation. This is supported by the fact that *e*-subjunctive and *e*-present are one and the same formation, and that the *e*-subjunctive, like the other Tocharian subjunctives, is an indicative in origin (Lane, *op. cit.*). It is quite likely that the *e*-presents were in these cases partially displaced to a modal value by the encroachment of newer *s*-presents. In view of the characteristic middle-intransitive value of the *e*-present/subjunctive, it is probably best taken as reflecting the

⁹ See G. S. Lane, *Lang.* 35.164-5, and Krause-Thomas, *Toch. Elem.* 225.

¹⁰ This verb was presumably displaced from its primary sense of 'be born' by *täm*-, the one verb in this series of unclear etymology.

Indo-European stative-intransitive suffix $-\bar{e}-$ as in Latin *iacēre*. The phonological treatment IE $\bar{e} >$ Kuch. *e*, Toch. (A) *a* is rare, but not unknown : cf. *reki*, A *rake* 'word' : OCS *rěčī*, or *meňe*, A *maň* 'moon' : Goth. *mena*.¹¹ This view necessitates a rejection of Pedersen's identification of the Indo-European stative suffix $-\bar{e}-$ in the sign of the imperfect $-\bar{a}-$ in Tocharian A (class III), *Tocharisch* 179-80, which is also accepted by Lane, 'Imperfect and preterite in Tocharian', *Lang.* 29.285-6 (1953). With some hesitation I would suggest that the palatalization before the imperfect $-\bar{a}-$ is secondary (a common enough situation), and would derive the $-\bar{a}-$ from the Indo-European optative suffix $-\bar{a}-$: Italic and Celtic subj. $-\bar{a}-$.¹² The functional transfer from optative to imperfect would be exactly paralleled by that of the Kuchean imperfect in $-i-$ < the Indo-European optative in $-yē/i-$ (Lane, *loc. cit.*). But this is only a tentative suggestion, and the imperfect $-\bar{a}-$ may have some other origin. For functional reasons, however, it is most unlikely that it contains the Indo-European stative suffix $-\bar{e}-$.

The resultant situation which we posit for Proto-Tocharian is the following:

intransitive-middle present $*nek-\bar{e}-$

intransitive-middle aorist $*nek-s-$

with either or both opposed to a transitive, athematic stem $*nek-$.

To my mind decisive for this theory of the distribution of the $-s-$ according to voice in the aorist in Tocharian is the verb 'come' in Kuchean : 3 sg. act. *śem*, 3 pl. *kamem*. These forms have been plausibly derived by G. S. Lane from an athematic root aorist, IE $*g^wem-t$ $*g^wmm-ent$.¹³ Even if one accepts, which I do not, the derivation of *śem*

¹¹ Ivanov, *Tox. Jaz.* 17 ; Krause-Thomas, *Toch. Elem.* 54-5.

¹² Benveniste, 'Prétérit et optatif en indo-européen', *BSL* 47.11-20 (1951).

¹³ *Lang.* 35.174, and similarly in 'The Indo-European labiovelars in Tocharian', *Indogermanica* (Festschrift W. Krause) 74 (Heidelberg, 1960).

from a long vowel form akin to Lat. *uēnit*, with Krause-Thomas, *Toch. Elem.* 55, 253, the situation is not altered. The existence of an aorist or preterite active **k'em-/kam-* in Proto-Tocharian is guaranteed. But the preterite middle (deponent) of this verb is sigmatic : 2 sg. *kamtsatai*, 3 pl. *kamtsante* (with epenthetic *-t-*). Hence we have a clear and independent testimony of the contrast athematic aorist active/sigmatic aorist middle. The pattern athematic subjunctive active *nakäm/e*-subjunctive middle *netär* is exactly paralleled in the preterite by athematic active *sem*/sigmatic middle *kamtsatai* (cf. 3 sg. *neksate*), and the example of the verb 'come' is the more valuable because it is totally isolated in the system of the preterite. It is residual.

One possible objection that might be raised against the existence of an intransitive-middle aorist in *-s-* is the existence in Tocharian A of five verbs which form an apparently athematic preterite middle, while showing a 'sigmatic' (class III) preterite active. These are 3 sg. *nakät tamät pakät lyökät tsakät* 3 pl. *nakänt tamänt lyökänt*. Only forms of the third person are found. These are taken by Krause-Thomas, *Toch. Elem.* 247, as reflexions of the Indo-European root aorist middle : e.g., *pakät pakänt* < **pek^w-to *pek^w-ento*.

This objection may be met in one of two ways. If one accepts the derivation from athematic aorist middle, then it is only necessary to assume that in certain of the verbs of the *s*-preterite class, the aorist intransitive-middle stem in *-s-* must in some dialects have coexisted with, or been in complementary distribution with, a continuation of the Indo-European athematic root aorist middle. This simply projects back into Proto-Tocharian the situation existing in Tocharian A, where sigmatic and asigmatic preterites of class III are in complementary distribution according to the particular verb.

There is another explanation possible for these forms, to which I subscribe, which does not assume that they continue

Indo-European root aorists middle. There are, in fact, a number of reasons why root aorists middle are very unlikely in these forms.¹⁴ In the first place, this would be the only place in the verbal system of either Tocharian language where the Indo-European root aorist middle was preserved, but we have a whole class : five verbs. It would be curious under these circumstances that the root aorist ACTIVE should be preserved in only one verb alone (*šem*) in all of Tocharian. This goes against the normal pattern of conservation of archaic verb forms in the several Indo-European languages. From the comparative point of view there is little justification for athematic root aorists, active or middle, in the verbs of this class ; one may contrast *šem* < **gwem-t*, which can be exactly equated with Skt. *agan*, and Arm. *ekn*. The latter is instructive, since the root aorist (active only !) is preserved only in a tiny number of instances in Armenian. There is also the fact that these root aorists middle would be preserved only in Tocharian A, which is known to be in general less archaic than Kuchean. This is particularly noteworthy, since Tocharian A in three of the five verbs has clearly innovated in the present middle-intransitive, by comparison with Kuchean, in the formation of a -*nā*- present : *nāknāštār* 'perishes' *pāknāštār* 'ripens' *tsāknāštār* 'burns'. The opposition in A between transitive *s*-present (*nkūš* 'destroys') and intransitive -*nā*- present shows a more recent state of affairs than Kuchean, where the opposition transitive/intransitive is still carried by the diathesis of voice : *nakšām* 'destroys' / *nakštār* 'perishes'. There is finally the fact that this formation is attested only in the third person.

The explanation advanced here for the type *pakūt* is essentially the same as that proposed in an earlier study for the Slavic root aorist ending -*tŭ* and the Germanic weak preterite : the formal origin is the IE -*to*- participle,

¹⁴ Many of these reasons are similar in nature to those given in Part Two below against the traditional derivation of the Celtic *t*-preterite from a root aorist.

functioning as a 3 sg., and the functional conditioning factor is the intransitivity of the base verbs.¹⁵ It is curious that the Indo-European verbal adjective in **-to-* does not appear as a participle at all in Tocharian.¹⁶ This is obviously connected with the fact that the preterite participle in *-u*, (from the Indo-European perfect participle **-wos-/us-*) functions indifferently as active or passive, according to the context. The *-to-* participle was evidently displaced from the system by the encroachment of the multivalent *-wos-/us-* participle. I propose that in the few forms of the type *pakät nakät tsakät* we see the reflexes of *-to-* participles **pek^w-to-* 'ripe' **nek-to-* 'perished' **dheg^wh-to-* 'burned'. The vocalism of *lyökät* 'lighted, lit', ostensibly from **leuk-to-*, might be a secondary replacement of regular **lukät* from **luk-to-* after active *lyökäs*.

The original form was only the 3 sg. in *-(ä)t*; the identity with the real ending *-t* < **-to* made the creation of a new 3 pl. *-(ä)nt* very nearly automatic, on the model of *-at*: *-ant* = *-ät*: *-änt* = *-ät*: *x*. Just so beside OIr. *at-bath* 'he died' < IE **g^wə-to-* 'gone', was created a 3 pl. *at-bathatar*, with productive preterite plural ending. In Irish, just as in Tocharian, the process never went beyond the third person.

§ 6. HITTITE FORMATIONS IN *-s-*.

HITTITE has no form class which could properly be equated with the traditional view of the *s*-aorist in classical Indo-European. There are on the other hand, as G. Bechtel has stated,¹ 'several formations containing *-s-* which play an important role in the Hittite verb, though all the details of their history and relations are not clear' (p. 20).

¹⁵ 'Transitive and intransitive in the Celtic preterite passive, Slavic root aorist, and Germanic weak preterite', *Ériu* 19.25 ff. (1962). The formation is identical in type with that of the Modern Persian preterite: *kard* 'he did' < Iran. *kṛta-*, IE **k^rto-*.

¹⁶ It does occur as an ordinal suffix: B *-te* A *-t*.

¹ *Hittite verbs in -sk-* (Ann Arbor, 1936). Cf. also E. H. Sturtevant, 'The *s*-aorist in Hittite', *Lang*, 8.119-32 (1932), who has discussed certain of these formations, in my opinion unsatisfactorily.

We have already seen in the preceding chapter that Hittite and Luvian show a present forming suffix *-se/o-*, which is identical in function to the suffix *-ske/o-*. The distribution of these two suffixes in Luvian and Hittite is very similar to that of the same two in Kucanean and Tocharian A. In the Anatolian languages these suffixes have been incorporated into the verbal paradigm, and furnish an 'iterative-durative'² to essentially every verb. The Luvian form is *-šša/i-*, which corresponds to Hittite *-šša-* in the verbs *ešša-* 'make' (to *iya-*), *halzešša-* 'call' (to *halzai-*), *warrešša-* 'come to the aid of' (to *warrai-*). The same suffix *-s-* appears in Hieroglyphic 'Hittite' (*-sa-*) and in Lycian (*-s-*), as Laroche has shown, *BSL* 53.194-7 (1957).³

These forms are thematic, reflecting *-se/o-*. In Hittite they are inflected according to the *hi*-conjugation, but this is apparently not true of the Luvian group of Anatolian, and this conjugational type may be a Hittite innovation. In the thematization this suffix followed exactly the developmental pattern of *-sk-*, which is always thematic. By virtue of this thematization, however, the two suffixes *-s-* and *-sk-* ceased to have any palpable connection with the athematic avatar of the *s*-aorist, as pointed out in the preceding chapter.

As regards the relation between *-s-* and *-sk-*, it would seem clear that the origin of the close functional relation observable between the two must be sought in the enlargement by *-k-* of roots in final *-s-*, and the subsequent displacement of the morpheme boundary from *s + k* to *+ sk*. A clearly archaic example of this is the verb 'to protect', as pointed out by Ivanov (*Tox. Jaz.* 30): **peA-* (Skt. *pā-ti*, Lat. *pā-uir*), **peA-s-* (Hitt. *pahš-*, OCS *pas-ti*),

² The 'durative' value is primary (Bechtel, *op. cit.*). What we have in essence is an opposition perfective/imperfective, where the imperfective (in *-sk-/s-*) is the marked member, i.e., conveys more information. The similarity to the English verb, and the contrast with Russian where the perfective is the marked member, is striking.

³ See also his *Dictionnaire de la langue louvite* 144 (Paris, 1959), and Friedrich, *Hethitisches Elementarbuch* I² 190-1 (Heidelberg, 1960).

peA-s-k* ~ **peA-sk*- (Lat. *pāscō*). Another such triad, this time with more complex base, is **leuk*- (Hitt. *lukk*-), **luk-s*- (Kuch. *lukšäm* 'lights'), **luk-sk*- (OIr. *loscid*, MW *llosgi* 'burn'). It is interesting to note that both the Tocharian form in *-s*- and the Celtic form in *-sk*- are transitive. An example, where the *s* is an obvious radical element is the verb 'to sleep':⁴ **ses*- (Hitt. *šeš*-, Skt. *sas-ti*), **ses-k*- (Hitt. *šešk*-). The enlargement *-y*- likewise occurs to the above verb in its suffixed form, **ses-k-y*-, in Hittite *šeškiya*-. This is an extremely archaic pattern in Indo-European, as shown by the confrontation with the root **dhē*- (dheā*₁-) in Latin:

<i>ses</i> -	<i>dhā</i> - (<i>con-di-t</i>)
<i>ses-k</i> -	<i>dhā-k</i> - (<i>fhe-fhak-ed</i>)
<i>ses-k-y</i> -	<i>dhā-k-y</i> - (<i>faci-ō</i>)

The coexistence of full grade *dheā*₁- (τῑ-θη-μ) and *dheā*₁-*k*- (θηκ-α, *fēc-i*) beside the above zero-grade forms points to a certain amount of apophonic instability, which would account for the apparent violation of Benveniste's root form stricture (*Origines* 147 ff.) in **ses-k-y*-, or **peA-s-k*-.

Among the remaining Hittite verb formations showing an *-s*-, we have the suffix *-eš*-, suffixed to adjectives in the meaning 'become what the adjective denotes' (*idalu*- 'bad', *idalaweš*- 'become bad'). It corresponds in function exactly to Latin *-ēscō* (*albus* 'white', *albēscō* 'become white'), which is itself based on the stative in *-ē*- (*albeō* 'be white'). The inflexion is athematic in Hittite: 3 sg. *idalawešzi*.

It is possible that this suffix is an old form: the similarity with Latin is particularly striking. From the phonological and morphological point of view there is nothing against a derivation of Hitt. *-eš*- from IE *-ē-s*-, with the stative suffix *-ē*-, exactly parallel to Lat. *-ē-sk*-. In support of this should be noted the apophonic relation *mekki*-

⁴ Bechtel, *Hitt. verbs in -sk-* 15-16, with references.

'great' : *makkeš-* 'become great', where the pair *mek-* : *mak-ē(s)-* may be compared with Gk. *τρέφω* : *ἐτρέφην*, or *μένω* : Lat. *man-ē-re*. The form in *-ē-* regularly shows the zero-grade.

The basic form with stative function in *-ē-*, to which *-s-* was added, could have developed at any time the specialized meaning of 'becoming, entering into a state'; this is probably connected with the development of another Hittite suffix to denote state : *-ai-/iya-*. The arguments of Bechtel, *op. cit.* 25, whereby this ingressive meaning of *-s-* in Hittite *-eš-* would be directly comparable to the ingressive function of the sigmatic aorist in Gk. *ἐβασίλευσα* 'I become king', *ἡρξα* 'I became ruler', *ἐδάκρυσα* 'I began to weep', cannot be upheld. In the first place that such forms are sigmatic is accidental; they could as well be from any other aorist formation. But the primary objection is that this value in Greek is simply a semantic and functional combinatory variant of the basic meaning of the aorist aspect. It is not inherent in the suffix. The formation in Hittite *-eš-* is, in any case, primarily that of a present, just as Latin *-escō*.

If this explanation of Hitt. *-eš-* is acceptable, then we would have a quite archaic form : a suffix *-s-* parallel to *-sk-* in distribution (*-ē-s-* ~ *-ē-sk-*), but still athematic. Such an archaic feature, otherwise found only where the *-s-* has no function and is not descriptively segmentable, as in Skt. *dves-* or Hitt. *kiš-* 'become' : *ki-* 'lie', could only survive where there had occurred a complete formal and functional renewal : the replacement *-s-* → *-ēs-*, thenceforth unsegmentable. It is quite likely in fact that the suffix was already inherited into Hittite in the compound form *-ēs-*, since Hittite shows no other trace of the stative suffix *-ē-*.

A morph *-s-* does appear in one category of verbs, where the distribution partially parallels that of *-s-* in the Indo-European aorist. This is Friedrich's class I 1b (*Heth. Elem.*² § 155), consonantal *-mi* verbs with insertion of *-s-* between

stem and ending in certain forms, namely those with ending beginning with a dental (t or $z = [ts]$). All of the roots in Friedrich's s -class end in a dental stop: *ed-* 'eat', *mat-* 'hold out',⁵ *išpart-* 'escape', *hat-* 'dry', *huet-* 'draw'.⁶ Of these the best known is *ed-*, with its clear cognates elsewhere in the Indo-European group. I give below a partial paradigm—unfortunately not all the forms have come to light—of present and preterite of this verb, in an approximative morphophonemic transcription:

pres. sg.	1 <i>ed-mi</i>	pl.	1 <i>ad-weni</i> ⁷
	2		2 <i>et-s-teni</i> (<i>at-s-teni</i> ⁷)
	3 <i>et-s-zi</i>		3 <i>ad-anzi</i>
pret. sg.	1 <i>ed-un</i>	pl.	1
	2		2 (<i>et-s-ten</i> impv.)
	3 <i>et-s-t</i>		3 <i>ed-er</i>

Luvian apparently also has forms of the s -class, to judge from impv. 2 pl. *azzaštan/at-s-tan/* 'eat', pres. mid. 2 pl. *aztuwari/at-s-tuari/* 'you eat': H. Otten *Zur grammatikalischen Bestimmung des Luvischen* 49 (Berlin, 1953).

A close parallel to this type in Hittite, though it has been classed otherwise (as 'irregular'), is the *-hi* verb *au(š)-* 'see'. The distribution of *-s-* in the paradigm is

⁵ Kronasser, *Vergleichende Laut- u. Formenlehre des Hethitischen* 175, 199 (Heidelberg, 1956) assumes a root *mant-* on the strength of one misspelling, evidently for the sake of an etymology. For the form *manzazzi* cf. Friedrich, *Hethitisches Elementarbuch* 2 34 (Heidelberg, 1960).

⁶ This verb stem of the s -class has been inferred by H. Otten (apud Friedrich, *Heth. Wörterbuch* s.v. *huittiya-*) from the 2 sg. mid. *huezta* paralleling *huittiyaši* from *huittiya-* 'draw'.

⁷ There is some hesitation about these forms. I take 1 pl. *ad-weni* as the norm, rather than the *ed-wani* given first by Friedrich, *Heth. Wb.*, since the former occurs at least twice in Old Hittite texts: *a-tu-e-ni* 2BoTU 11a19, *a-du-e-(ni)* KUB XXXVI 110 Rs 5. By the form of the desinence *ed-wani* looks like a Luvianism, though Luvian shows universal *a*-vowel in this root. For the 2 pl., *et-s-teni* is common, while the form with *a*-vowel is a hapax, albeit in an Old Hittite text: *nu NINDA-an az-za-aš-te-ni wa-a-tar-ra e-ku-wa-te-ni* 'you eat bread and drink water' 2BoTU 8 III 34. One may note here the contrast in vocalism with 'drink' (itself spelled peculiarly), whereas in both texts cited above, the forms of 'eat' agree in *a*-vocalism with contiguous 1 pl. forms of 'drink' (*a-ku-e-ni*) in the same text.

precisely the same ; the difference lies in the partial *-hi* conjugation, and in the variant apophonic pattern in the root. Paradigm :

pres. sg.	1 <i>u-hhi</i>	pl.	1 <i>au-meni</i>
	2 <i>au-ti</i>		2 <i>au-s-teni</i> (<i>us-teni au-teni</i>)
	3 <i>au-s-zi</i>		3 <i>u-anzi</i>
pret. sg.	1 <i>u-hhun</i>	pl.	1 <i>au-men</i>
	2 <i>au-s-t</i>		2 (<i>au-s-ten</i> impv.)
	3 <i>au-s-t</i>		3 <i>au-er</i>

The coexistence of *-mi* and *-hi* forms in this Hittite verb may represent a conflation of the two conjugational types, perhaps of two aspectually or otherwise opposed forms from the same root. For the *-hi* conjugation forms, reflecting the Indo-European stative-intransitive perfect and a diathesis lost in Hittite itself, one may compare the appearance of the stative suffix *-ē-* in the verb 'see' in Latin (*vidēre*) and Balto-Slavic (OCS *viděti*, Latv. *vidēt*).⁸

The apparent regularity of the *s*-class is actually somewhat illusory in Hittite. There are a good many indications both that the distributional restrictions on the appearance of *-s-* were weakening, and that the restriction to the *-mi* conjugation was not clearly felt ; in the latter case this class simply shared in the general tendency of the Hittite verb during the period of the New Kingdom toward conflation of the two types.

Compare from *ed-* (forms are given first in normalized and then in morphophonemic transcription) : pres. 3 sg. *ezzai*/et-s-ai/ (*-hi* conj.) ; impv. 3 sg. *ezzaddu*/et-s-tu/ but 3 pl. *ezzandu*/et-s-antu/ (*-s-* before vocalic ending) ; impv. 2 sg. *et*/ed or et/ but also *ezza*, *ezzazza*/et-s ?/ ; pres. 2 sg. probably [*ezz*]ašši /et-si or even et-s-si ??. From *hat-* we have pres. 3 sg. *hati* /had-i/ and impv. 3 sg. *hadu* /had-u/, both simple *-hi* conjugation forms. From *išpart-* we have pres. 3 sg. *išparzai* /spart-s-ai/, pret. 1 sg. *išparzakhun* /spart-s-hun/ (both *-hi* conj.), and pple. *išparzant-* /spart-s-

⁸ See especially J. Vendryes, 'Sur les verbes qui expriment la notion de "voir"', *Choix d'études* 115-26 (Paris, 1952).

ant-/ as against the *s*-less forms *adant-* /ad-ant-/ and *hatant-* /had-ant-/; the pret. 3 sg. *išparzaš* may be interpreted as /spart-s-/ (normal *-hi* conj.), but also conceivably as /spart-s-s/, parallel to the normal pret. 3 sg. *išparzašta* /spart-s-t/. Finally, we have *-hi* conjugation forms also from *mat-*: pres. 2 sg. *mazatti*/mat-s-ti/, 3 sg. *mazzi*/mat-s-i/ as against the spelling of the normal 3 sg. *mazzazzi*/mat-s-zi/. From these examples it is apparent that the tendency was toward the expansion and generalization of *-s-* during the course of Hittite itself. The available evidence indicates that the restriction of occurrence of *-s-* to position before dental is the original one in Hittite, and that its further extension is a later phenomenon; we shall examine further below the question as to whether this earlier situation in Hittite is, in fact, likely to reflect the state of affairs in Proto-Indo-European.

It is naturally tempting to invoke a purely phonetic explanation of the genesis of the *-s-* of *et-s-zi* and the other such forms of the *s*-class. For it would be possible, at least, to regard *et-s-zi* as reflecting Indo-European [**et^sti*], with the development of an offglide *s* between two dental stops coming together across morpheme boundary. Hittite would then preserve another Indo-European phonetic feature (besides the laryngeals) in a form more archaic than that of any other cognate language. This has been the view of Sommer (*HAB* 148-9) and Sturtevant (most recently *HG*² 62-3), and has been followed, e.g., by E. Risch, *Corolla Linguistica* (Festschrift F. Sommer) 193 n. 8. In itself it is not impossible: Meillet (*Les dialectes indo-européens* 58-61) has made it likely that the stage *-t^st-* persisted at least into Indo-Iranian times, which would afford a parallel from another Indo-European dialect. Such direction of argumentation could likewise be put into rapport with the comparative rarity of Hittite athematic verbs with root ending in a dental.

There are however several points which prohibit such an explanation, or at least render it extremely unlikely. The first is quite simply the existence of *au(š)-*, where

despite its irregularity the identical distribution of *-s*-BEFORE a dental indicates that the appearance of *-s*- AFTER a dental is not obligatory, even in the period of our earliest records; *au(š)*- is well attested in Old Hittite. And in the second place, if one assumed such a phonetic origin of *-s*-, this would require the assumption of a whole development /-tt-/ [-t^st-] > /tst-/ , with development of [s] to phonemic status /s/, and beyond that subsequently to morphemic status as well. For the morphemic cut could then apparently be at will either / .t-st . / (necessary to explain, e.g., *au-šteni*) or / . . ts-t . . / (necessary to explain, e.g., *išparz-ir*), which is somewhat unlikely. It is preferable to accept this *-s*- at face value, and assume that it was not, at the origin, a phonetic accident, but rather that it had from the outset independent phonemic status.

In one other small group of Hittite verbs, what appears to correspond to an Indo-European aorist *-s*- has been incorporated into the root itself, appearing throughout the conjugational system. Of these the clearest is *damaš-zi* 'oppresses', of which the pret. 1 sg. *damaššun* is almost exactly equatable with Homeric ἐδάμασσα. Benveniste has stated (*BSL* 51.23 [1955]) that *damaš-zi* establishes the antiquity of ἐ-δάμασ-σα with the morpheme division as such, comparing also ἀδάματος.

It seems best to analyze both Hitt. *damaš-* and Gk. δαμασ- as showing *-s*- suffixed to a set root **demH-*, a formation akin in nature to that of the Sanskrit *-iṣ-* aorist discussed above, but an earlier formation, doubtless antedating the specialization and restriction of *-s*- to an aoristic function. I leave aside the question of the root vocalism; the variant *tameš-* beside *damaš-*, which is ancient in Hittite (e.g., 2BoTU 21 III 13, from the Old Kingdom), is likewise problematical.

Three other verbs in Hittite appear to reflect the same type of structure: *kalleš-zi* 'calls', *kaneš-zi* 'finds; favors, honors' and *ištamaš-zi* 'hears'.⁹ The first is undoubtedly to be connected with the set root of Gk. καλέω 'call',

⁹ It is possible that *punuš-zi* 'asks' belongs here as well.

κλησις. The Hittite form recalls singularly the Greek aorist ἐκάλεσσα precisely as *damaš-* recalls ἐδάμασσα. Since we know the root was set in Indo-European, and that *kalleš-* cannot be a regular denominative in *-eš-*, it is extremely likely that the dissyllabic *-ale-* of *kal(l)eš-* reflects an Indo-European cluster of resonant plus laryngeal, either full or (more likely) zero grade *-lH-*. In itself this is not surprising; J. Puhvel¹⁰ has pointed out several disyllabic reflexes of resonant plus laryngeal in Hittite, of which at least one, *daluga-* 'long': Skt. *dīrgha-*, Gk. δόλιχος cannot be questioned. The difference in vocalism, *-alu-/ -ali/e-*, is perhaps attributable to the nature of the particular laryngeal involved.

Hj. Frisk¹¹ connected *kaneš-* with the etymologically somewhat obscure Vedic *-iṣ-* aorist *akāniṣam* 'was content', construed with the participle of an accompanying verb, e.g., *akāniṣam pūnar yān* 'I went back contented' (RV 4.24.9), doubtless an inherited construction, of the type τοὺς δ' ἔλαθ' εἰσελθών 'he entered unnoticed by them' (Ω 477). But while the *-iṣ-* aorist *kāniṣ-* superficially recalls Hitt. *kaneš-* (for the vocalism cf. *kalleš-* and perhaps the variant *tameš-*, above), the two verbs are too divergent in meaning and syntax—the Hittite verb is transitive, with a person as object—to afford much confidence in their etymological connection.

A more recent etymology is that proposed by V. Machek, 'Neun hethitische Wortvergleiche', *Lingua Posnaniensis* 7.77-84 (1959), who equates *kaneš-* with Latin *honus*. While this is tempting at first sight, there are a number of serious difficulties. From the semantic point of view this explanation is only possible if 'honor', rather than 'find, bring to light', is the basic meaning in Hittite. For this there is no evidence, and the meaning 'find' would seem to prevail in archaic

¹⁰ 'The sea in Hittite texts', *Studies ... Whatmough* 225-37; *Laryngeals and the Indo-European verb* 35 (Univ. of Calif. Publ. in Ling. 21 [1960]).

¹¹ Frisk, 'Zu einigen Verba des Hörens im Indogermanischen', *Göteborgs Högskolas Årsskrift* 56.20 (1950).

texts ; it is common in the Hittite Laws. Even if there were no semantic objections to the comparison, the formal situation would be unfavorable. Machek correctly points out the objection raised by Ernout-Meillet, *Dict. etym. lat.* to the base **ghon-e/os-* of *honos*, *honestus* set up by Walde-Hofmann, *Lat. etym. Wb.* : such *s*-stem nouns should have radical *e*-vocalism. It is possible to account for the aberrant Latin *o*-grade by an already documented morphological analogy : the regular change *e* > *o* before *w* and *l* *pinguis* in *molestus*, OLat. *iouestod* (*iūstus*), **rowest-iko-* (*rūsticus*), from **mel-es*, **yew-es*-, **rew-es*-, caused the replacement of *e* by *o* in other forms of similar structure : *modestus*, *domesticus*, *honestus*, thus reestablishing the unity of the form class. Precisely the same analogical change occurred in the series *domāre*, *sonāre* (*sonere*), *tonāre* (*tonere*), *molere*, *uomere*.¹² There is thus every reason to postulate **ghen-es-* as the Italic base, which is not an exact equation of Hitt. *kaneš-*.

There is finally the derivational problem of the athematic Hitt. *kaneš-zi*. Machek evidently considers it a denominative from a **kaneš-* = *honos*, by means of a zero suffix. The base *kaneš-* is not otherwise attested in Hittite ; contrast *honos* : *honōrāre*. Furthermore, denominatives with zero suffix are extraordinarily rare in Indo-European, the only clear case being the isolated Skt. *bhiṣakti* 'heals' to *bhiṣaj-* 'physician'. The only comparable Hittite formation would be *huwap-zi* 'treat badly' : *huwappa-* 'evil, bad', but in this pair the thematic vowel of the noun might suggest it was a deverbative. Hence Machek's **kaneš-* > *kaneš-zi* would be totally isolated within Hittite, as well as hypothetical. For these reasons the etymology of Machek is not convincing.

Likewise *ištamaš-zi*, beside *ištamana-/ištamina-* 'ear', *ištamahura-* 'earring' (?), is etymologically obscure. One can only concur with Frisk that the noun 'ear' is more likely to be a derivative from 'hear' than the verb 'hear'

¹² See *Evidence for Laryngeals* 195-6.

to be a denominative from 'ear'. Compare OIr. *clúas*, MW *clust*, ON *hlust*, Kuch. *klautsane*, *klautso* (A *klošäm*, *klots*), all from IE **kleu-*.

The only conclusion one can draw from these forms is the possibility of their ultimate derivation from *seṭ* roots by suffixation of *-s-*, as appears likely for at least two of them, *damaš-* and *kalleš-*. But the only evidence remains finally the superficial similarity, which we may tabulate as follows:

<i>ištamaš-</i>	<i>damaš-</i>		
	<i>tameš-</i>	<i>kaneš-</i>	<i>kalleš-</i>

Beside two of these we may set the forms without final *-s-* which occur in other Indo-European languages: Gk. *δαμά-ω*, *καλέ-ω*. These would suggest clearly that the *-s-* of the Hittite forms was originally a separable element.

It is apparent that the 3 sg. preterite of forms of the *damaš-* class would be identical with an Indo-European 3 sg. sigmatic aorist: *root + -s- + -t*, **damas-t*. The parallelism is however more complete if we compare the 3 sg. preterite of a verb of the Hittite *s*-class, where the *-s-* is descriptively segmentable: *et-s-t* to *ed-* 'eat'. It is even more striking if we compare Hitt. pres. *et-s-zi* ~ pret. *et-s-t* with a Celtic *s*-subjunctive, which directly continues the sigmatic aorist: abs. **ret-s-ti* ~ cjt. **ret-s-t* (OIr. *reiss* ~ *-ré* to *rethid* 'runs'). Yet the functional utilization of the element *-s-* in these two are not strictly parallel. In the *s*-class in Hittite we have in appearance simply an *-s-* functioning in a small number of verbs in root-final dental as a desinential component to endings beginning in a dental.

Now the tendency toward creation of composite endings in *-st(-)* exists elsewhere in Hittite: the 2 and 3 sg. pret. *-šta* occurring in some verbs of the *-hi-* conjugation, e.g., *memišta* 'said'. But this collocation of *-s-* and *-t-* occurs in other languages as well, notably in the Latin endings *-istī*, *-istis*, and in the Tocharian (A) 2 sg. pret. *-(ä)st*, Kuchean *-sta*. Neither G. S. Lane¹³ nor W. Krause¹⁴

¹³ 'Imperfect and preterite in Tocharian', *Lg.* 29.284 (1953).

¹⁴ *Westtocharische Grammatik* 180 (Heidelberg, 1952).

has been able to maintain unequivocally the original identity of these formants in Latin and Tocharian. There are, in fact, good phonological arguments against direct equation, particularly the characteristic *-i-* of the Latin forms (see above, p. 11 ff.), which is absent in Tocharian; morphologically one should call attention to the recurrence of this *-is-* elsewhere in the Latin perfectum, in varied function, which is likewise not observable in Tocharian. It would be equally consonant with simple general phonetics to assume an independent and adventitious collocation of the homorganic *-s-* and *-t-* in Latin and Tocharian, and the constitution of a phonologically heavy syllable with homorganic dental cluster *-st-*. There are serious reasons for preferring a general phonetic explanation for this *-st-* desinence, rather than a genetic explanation.

The number of languages in the Indo-European group which have developed an ending *-st-* for various persons is far greater than Latin *-istī*, *-istis* and Tocharian *-sta/-st*. Their dialectal distribution is very nearly random, and what is most significant is that in all cases they are of demonstrably secondary origin. In some cases we have the simple addition of one ending to another, as in Hitt. *-sta* $/-st/ < -s + -t$. In other cases the process is different, as in Greek where it is a consequence of the change $-t-t- > -st-$. But the result is always the same: a desinence in *-st-*.

We have in Greek the well-known type $\epsilon\phi\eta\sigma\theta\alpha$, $\tau\iota\theta\eta\sigma\theta\alpha$, etc., where the model is $\omicron\iota\sigma\theta\alpha < \text{Foi}\delta\text{-}\theta\alpha$.¹⁵ Simple internal reconstruction clearly shows the secondary origin and late expansion of this form in Greek.

For the 3 sg. a process very similar to that of Hittite *-sta* has been suggested to explain Venetic *-sto* (*dona.s.to* 'he gave') and *-st* (*a.tra.e..s.t* 'he ordered').¹⁶ We know, however, too little of the Venetic language to give much weight to the explanation; but the existence of the desinences in *-st-* cannot be denied.

¹⁵ Cf. Schwyzler, *Griech. Gramm.* 1.662.

¹⁶ E. Polomé. *MNHMHΣ XAPIN* 2.96, who incorrectly takes Hitt. *-sta* as $/-sta/$ not $/-st/$.

There is a series of 2 sg. forms in Middle Welsh which show *-st*: *aethost* 'you went', *buost* 'you were', etc. Thurneysen has stated that the final *-t* is 'doubtless a suffixed pronoun';¹⁷ the formation is evidently a Brittonic innovation.

From an entirely different branch of Indo-European, Iranian, we may compare the enclitic forms of the verb 'to be' in Yagnobi: 1 sg. *-im* 2 sg. *-išt*. The secondary character of the *-t* is apparent from the cognate forms in Sogdian, *-ym -yš*, as pointed out by Benveniste.¹⁸ Likewise comparable for the general phonetic tendency is the peculiar moveable *-išt* in Yagnobi, which may be added to forms of all persons: 3 sg. *wāut/wāut-išt* 'he comes', 2 sg. *kun/kun-išt* 'you make'.¹⁹

There are in the Germanic area the 2 sg. endings in *-st* which were independently created in both Old High German and Old English: OHG *habēs(t)* (MHG consistently *-st*); OE *hafas(t)*, *hæfs(t)* 'you have'. These endings of course survive to the present day in both languages.

There is finally the striking parallel with the one other desinenence in Indo-European with a consonant cluster: *-nt-*. This ending exhibits the same phonetic features; a heavy syllable with homorganic dental cluster. It is hardly explicable by genetic factors alone that this element *-nt-* (or *-nd-*) is so common as a suffixal and desinential component, both nominal and verbal, in so many Indo-European languages, down to the present time.

In Hittite an interpretation of the ending *-šta* in terms of a general phonetic principle rather than a hazardous comparison, would accord with the usual—and most convincing—interpretation of these *-hi* conjugation preterites in *-šta*. This has been most recently stated by R. A. Crossland and A. S. C. Ross, *Arch. Ling.* 6.122 ff. (1954). Their study is largely devoted to showing that in Hittite and other languages the tendency is for 3 sg. forms to be

¹⁷ *OIGr.* 434.

¹⁸ *Grammaire sogdienne* 2.63–4 (Paris, 1929).

¹⁹ Geiger, *Grundriss der iranischen Philologie* 1.2.340–41.

employed as 2 sg. forms, not the other way around ;²⁰ in the case of 2 and 3 sg. *-šta* it is the latter function which is primary. This is in itself a strong argument against equating Hitt. *-šta* with Lat. *-isti* and/or Toch. *-(ä)st*, Kuch. *-sta*, were one so inclined. Crossland's explanation of *-šta* is that it is to be read */-st/*, and results from a conflation of the older *-hi* preterite 3 sg. *-š* ('significantly more frequent in the "archaic" texts') and the *-mi* preterite 3 sg. *-t*. The fusion of the two forms *-s* and *-t*, instead of the mere substitution of the *-mi* form for the *-hi* form as is common in the other persons of the Hittite verb, would thus be directly attributable to the general phonetic principle which I have suggested above.

A. Goetze has suggested (*Kleinasien*² 59) that the 2 sg. pres. *paišti* 'you give' shows the original form of the desinence in the *hi*-paradigm. For the reasons given above, this view must be rejected: the original form is furnished by the parallel conjugational forms *daiitti* 'you put', *naitti*

²⁰ The article is a refutation of W. Krause, 'Zu einigen tocharischen Personalendungen', *KZ* 69.150-64 (1951), who tries to show that the Tocharian (A) primary 3 sg. ending *-s* < IE 2 sg. *-si*. On the other hand, Crossland's suggestion that the cause of the use of the 3 sg. for 2 sg. is 'politeness' or 'respect', as in a good many Western European languages, is impossible to accept. In the first place it would be somewhat surprising to find such a characteristic product of the tradition of a courtly society in a language belonging to the cultural milieu of the ancient Near East of the second millennium B.C. But more serious is that there is no discernible tendency in Hittite toward the use of a 3 sg. personal pronoun in direct address. Crossland has confused two syntactically different phenomena. In the use of an originally 3 sg. form for the 2 sg. in direct address, as is common in Hittite, there is a simple replacement of one ending by another; the personal pronoun, if expressed, remains 2 sg., and the sentence is syntactically the same as before. On the other hand, such expressions as Span. *Vd. quiere*, Pol. *pan chce*, Swed. (*professorn*) *vill* (to supplement Crossland's examples) are syntactically construed as third persons, but used as a SUBSTITUTE for direct address; in no way do they imply a replacement of the 2 sg. form by the 3 sg. Crossland's reasoning would lead us to expect the decadence of the 2 sg. verb form in such European languages, which is of course not the case. In the one textual example he cites from Hittite, *kinun-a-mu-za ammel DINGIR-YA SA-SU ZI-SU humantet kardit kinuttu* 'now let my god unreservedly reveal his heart and mind to me', the construction is entirely third person, and not direct address—as his translation shows—any more than such a phrase as *God be with us*. The verb form is simply 3 sg. imperative, and the relevance of the passage to Crossland's point may legitimately be questioned.

'you lead', etc. The *-st-* form spreads at the expense of the simple form in *-t-*. For *paišti* to be replaced by a **paiitti* is far less likely. The older form appears in the 2 sg. pret. *paitta*, without *-s-*.

We have the same situation in the Latin perfectum. The Greek endings of the perfect 1-3 sg. are *-a -θα -ε*; with the addition of the characteristic *-i*, the Proto-Italic endings are an exact counterpart: *-ai -tai -ei*.²¹ It is only later, in Latin, that the form of the 2 sg. is transformed: *-tai* → *-is-tai*, with the insertion of the obscure element *-is-*.

As has been pointed out earlier, the *-s-* element of the Hittite *s*-class apparently lacks any function other than as a desinential component of limited distribution. But whether this reflects the original situation in Proto-Indo-European is certainly open to question. The Hittite *s*-class even in its earlier stage gives very much the impression of a situation distributionally stabilized for a time in the manner described, in which the element *-s-* has lost any more independent status either in function or in possibility of occurrence, which it might once have had.

There is one remaining morph *s* which exists in Hittite. This is the *-š* already alluded to which appears as pret. 3 sg. and 2 sg. ending in the *-hi* conjugation, e.g., *dāš* 'he, you took', *tarnaš* 'he, you left'. In the vocalic stems, extended forms like *tarnašta* of the type discussed above (p. 84 ff.) do occur, but only sporadically outside of Friedrich's class II 2d, the type *memišta* 'said', *eššešta* 'did, made', where the phonological identity of the final *-eš-* with the productive *-mi* verb denominatives in *-eš-* was particularly conducive to the utilization of the *-mi* form *-ešta* for the pret. 3 sg.²² Among the *-hi* verbs only the pret. 3 sg. *zinnit* 'ended' shows the simple *-mi* ending *-t*. In the unproductive consonantal (athematic) stems of the *-hi* conjugation there are signs that the ending *-š* was losing ground, and being replaced by the *-mi* form *-t*, i.e.,

²¹ For the reconstruction **-ei* (Lat. *-i-t* > *-it*) see J. Vendryes, 'La 3^e personne du singulier du perfectum latin', *Choix d'études* 156-8.

²² As pointed out by Crossland, *loc. cit.*

not yielding *-št* (*-šta*) as above, but simply *CV(C)C-t*.²³ There are some eighteen consonantal *-hi* verbs, for eleven of which 3 sg. preterites are attested. Of these three show only the ending *-š*, of which two are very frequent in Hittite texts: *šipandaš* 'sacrificed, poured a libation' and *a-ar-aš* (= /ars/) 'came'. Four verbs of relatively rare occurrence show only the ending *-t*, and four common verbs have both forms attested: *akkiš* ~ *akta* 'died', *karipaš* ~ *karipta* 'devoured', *šakkiš*²⁴ ~ *šakta*/*šekta* 'knew', and *wakkiš* ~ *wākit* (?) 'bit'.

In view of the general Hittite tendency toward replacing the 2 sg. by the form of the 3 sg. and their identification, as discussed by Crossland (above, p. 86), it can be taken as reasonably certain that this form was originally a 3 sg. ending in Hittite; whether its use for the 2 sg. is equally old is a question I am not prepared to answer, but, in any case, as we shall see, a question of secondary importance. We may with confidence assume for Hittite *-hi* verbs a preterite 3 sg. of the structure *root/base* plus *-š*.

We are left finally in Hittite with a situation rather similar to that of Tocharian: the existence of a morph *-s*-appearing both as a suffix morpheme, and as a 3 sg. desinence. The distributional patterns in these two dialects make it clear that we are dealing with two types of manifestation of one and the same original morph. The question still remains, what then was the original nature of this element *-s*-, and what plausible hypotheses can we make to account for its subsequent development? To attempt an answer to this question we must consider the problem from two aspects. One of these is comparative and descriptive: the parallels in other Indo-European languages to these Hittite and Tocharian utilizations of *-s*-, from the point of view of form, distribution, and function. The other belongs more to the plane of general linguistics: the process of the constitution of a paradigm. To these the final chapters of Part One are devoted.

²³ Or possibly in some cases thematic *CV(C)-it*; it is not certain how the spelling of such forms as *išgarrit*, *wewakkit* should be interpreted.

²⁴ Significantly in an Old Hittite text, 2BoTU 21 I 3.

§ 7. THE SANSKRIT PRECATIVE AND THE CONSTITUTION
OF A PARADIGM

THE use of an *-s* as desinence of the 3 sg. preterite (or secondary ending) recurs in other Indo-European languages, as has been demonstrated recently in two articles by T. Burrow.¹ The first of these, by comparison with Avestan forms in *-yā̎* < **-yās*, shows that the original form of the 3 sg. root aorist optative (later precative) in Sanskrit was, e.g., *bhū-yā̎-s*, not **bhū-yās-t* with phonetic loss of the final *-t*; a **-yās-t* would yield **-yās* in Avestan. The second study makes a strong case for the antiquity of a 3 sg. aorist *dhās* as *dhā-s*, a form found in the Hiranyakeśi-grhyasūtra.² In the precative Burrow shows that this 3 sg. form has been gradually generalized in the paradigm, e.g., 1 sg. *bhū-yās-am* replacing **bhū-yā-m*, 1 pl. *bhū-yās-ma* replacing *bhū-yā-ma*.

There is no valid reason for questioning this analysis; but it is the position of *-s* as 3 sg., the fundamental member of the paradigm, which is functionally and structurally significant, and not the identity of 2 sg. and 3 sg. *-s* on which Burrow insists. It is the 3 sg. which will tend to impose its form on the rest of the paradigm, irrespective of the form of the 2 sg. or any other person, owing to the peculiar functional position of the 3 sg. as 'la personne zéro', 'la non-personne', as Beneveniste has put it in his very significant study of this problem in general linguistics: 'Structure des relations de personne dans le verbe', *BSL* 43.1-12 (1946). Compare also his subsequent studies, 'La nature des pronoms', *For Roman Jakobson* 34-37 ('s-Gravenhage, 1956); 'De la subjectivité dans le langage', *Jour. Psych.*

¹ 'The Sanskrit precative', *Asiatica (Festschrift Weller)* 35-42 (Leipzig, 1954); 'An archaic verbal termination in early Indo-Aryan', *Indo-Iran. Jour.* 1.61-76 (1957).

² I do not wish to go into the further ramifications introduced by Burrow, the ending *-stha* which he finds, and the complex Indo-European structure which he builds on the basis of these rare forms and some not very compelling comparisons with Hittite. The point to retain is the existence of a 3 sg. ending *-s*; its extension to the 2 sg. is another matter, and the collocation *-s-t* (as in *-stha*) I would prefer to explain in another way, as above, p. 84 ff.

1958.257-265. The fundamental role of the 3 sg. is that of 'pure' predication, divorced from the implications of 'personality' (personalness) and subjectivity, which Benveniste has shown are the basic correlations. In the system of oppositions which distinguish the 'persons' in the verb, the 3 sg. is the non-marked, negatively characterized form par excellence. This relation among the persons may be illustrated in a binary system as follows:

	1	2	3
personal/non-p.	+	+	-
subjective/non-s.	+	-	0

The critical position of the 3 sg. within the paradigm is evident. It is characterized uniquely by being non-personal; the correlation of subjectivity is unspecified, since this is contingent upon the presence of personalness.

In view of the functional position of the 3 sg. as the zero-person, the non-person, opposed to the personal 1 and 2 sg., it is not surprising that the formal counterpart of this situation is frequently one where 1 and 2 sg. are marked by special desinences, whereas the 3 sg. shows only the bare stem without ending. Benveniste in the first article cited has given a partial list of languages where the 3 sg. exhibits at some point in the verbal system a zero ending, in conformity with its functional position as zero-person; these examples are drawn from Indo-European, Semitic, Altaic, Finno-Ugric, and Amerindian languages. To illustrate the type, compare the non-objective present of 'write' in Hungarian: sg. 1 *ír-ok* 2 *ír-sz* 3 *ír*, of the structure root + desinence ($R + D$), with 3 sg. zero desinence. Another example is the Turkish determined preterite of 'love': 1 *sev-di-m* 2 *sev-di-n* 3 *sev-di*, of the structure root + suffix + desinence ($R + S + D$), likewise with 3 sg. zero.

The formal process of the replacement of the Sanskrit precative is to be envisaged as a reinterpretation of the 3 sg. form with ending, here *bhūyā-s*, as containing a zero ending, i.e., *bhūyās-ø*, with the *-s* part of the stem, to which the productive endings for other persons can be added: *bhūyās-am*, etc. What is most significant about the history

of the Sanskrit precative is the sequence of morphological transformations which have brought about its creation. These historical transformations are a function of the nature of inflected languages and paradigmatic change; they have no particular connection with the precative, Sanskrit, or the ending *-s*.

We have an original paradigm of the normal Indo-European structure *root + suffix + desinence*, *R + S + D* : 1 sg. *bhū-yā-m*, 3 sg. *bhū-yā-s*, 1 pl. *bhū-yā-ma*. The 3 sg. desinence has phonetic body like the other persons. But in the 3 sg., by virtue of its functional position as the zero-person and the fundamental member of the paradigm, the suffix + desinence *-yā-s* (*S + D₃*) was fused into a new suffix *-yās-* (*S'*) plus zero ending ($\emptyset$) : 3 sg. *bhū-yās- $\emptyset$* . This new suffix *-yās-* (*S'*) then replaced the old suffix *-yā-* (*S*), wherever it appeared in the paradigm :

1 sg. *bhū-yā-m* $\rightarrow$ *bhū-yās-am*

1 pl. *bhū-yā-ma* $\rightarrow$ *bhū-yās-ma*.

Among the clearest of the problematic Indo-Iranian verb forms cited in Burrow's first study is the 3 sg. secondary ending in *-š* of Old Persian : *āiš* 'went', *akunauš* 'made'.³ Burrow, quite rightly, regards this ending *-š* ($< s$ after *i* and *u*) as constituting evidence for a 3 sg. *-s*. It is curious that he did not notice that Old Persian in fact underwent the same morphological transformation of the paradigm as the Sanskrit precative. Even as a purely typological comparison the Old Persian forms are significant. For beside the 3 sg. in *-š* which Burrow cites, we have also 3 pl. forms *-šaⁿ* *-haⁿ* : *patiy-āišaⁿ* 'came to', *abarahaⁿ* 'bore'. These plural forms can only be explained in terms of the sequence of morphological transformations which we have demonstrated above. A form *āiš*, originally of the structure *root + zero suffix + 3 sg. -s* (*R- $\emptyset$ -s*), was reinterpreted as *root + suffix -s- + 3 sg. zero* (*R-s- $\emptyset$*). In exactly the same fashion as the precative it was extended through the paradigm—at least to the 3 pl. (only third

³ For the forms see R. G. Kent, *Old Persian*² 76 (New Haven, 1953).

person forms are attested)—and to other paradigms as well. The new 3 pl. forms *-šaⁿ* (originally after *i* and *u*) *-haⁿ* (after *a*) represent the new suffix *S'* + 3 pl. *-an*, with the simple addition of the productive 3 pl. secondary ending.

The variation in form between *-šaⁿ* and *-haⁿ* is particularly instructive, for it provides the conclusive proof that Old Persian had a 3 sg. ending inherited from Indo-Iranian **-s*. The 3 pl. *-haⁿ* can only be explained by the existence of an original 3 sg. *-h* < *-s* after *a*. The morphological process is the same: 3 sg. *-h* is reinterpreted as suffix *-h* + 3 sg. *-ø*, which brings about the formation of suffix *-h* + 3 pl. *-an* (*abarahaⁿ*). But while 3 sg. *-š* (*āiš*) could conceivably be derived from (*i*)-*š-t*, a 3 sg. *-h* cannot possibly come from (*a*)-*s-t*, but only from (*a*)-*s*. There is thus independent Old Persian evidence for the 3 sg. **-s* beside the Avestan root aorist optatives *fratuyā* 'have power', *tūtuyā* 'id', which Burrow has correctly analyzed as reflecting **-yās*.

In view of these arguments, all of a functional nature, Burrow's statement (*IIJ* 1.73) that 'there is nothing in the (root aorist optative) paradigm *bhūyām*, *bhūyās*...to justify the precative extension (*bhūyāsam*, *bhūyāsmā*)', is contradictory to linguistic theory as well as (by his own admission) observable fact. The assumed role of his highly conjectural 3 sg. precative *bhūyāstha*⁴ in this process thus simply vanishes.

Examples illustrating paradigmatic change of the type analyzed here are frequent in Indo-European languages of all periods. A nearly perfect parallel to the Sanskrit development is afforded by the paradigm of the verb 'be' in Polish:

<i>jestem</i>	<i>jestesmy</i>
<i>jestes</i>	<i>jesteście</i>
<i>jest</i>	<i>są</i>

⁴ 'The precative extension could only have taken place on the basis of forms like ... *bhūyāstha*, since in this form there is an *-s-* before the termination *-tha*, which by analogy could easily spread to other terminations also (e.g., *bhūyās-ma* after *bhūyā-s-tha*). The genuineness of the form *bhūyāstha* is confirmed by the precative extension, since without the existence of such forms such a development would be incomprehensible' (*loc. cit.*).

where the 3 sg. and 3 pl. alone preserve their old, Common Slavic form, and the rest of the paradigm is built on the 3 sg. as though *jest* were the bare stem with zero ending. The same process is characteristic of the formation of the masculine past tense in Polish; paradigm *mieć* 'have':

<i>miałem</i>	<i>mieliśmy</i>
<i>miałeś</i>	<i>mieliście</i>
<i>miał</i>	<i>mieli</i>

where only the third person corresponds in form to the Common Slavic participial construction.

Precisely the same development as in Polish has occurred in Modern Persian, both in the 'substantive' verb, the verb of existence 'be',⁵ and in the preterite. Compare the paradigm of the substantive verb:

<i>hastam</i>	<i>hastim</i>
<i>hasti</i>	<i>hastid (hastin)</i>
<i>hast</i>	<i>hastand (hastan)</i>

The structure of the paradigm is clearly base *hast-* plus the productive personal endings; the 3 sg. shows zero. Etymologically only the 3 sg. *hast* is old (with secondary *h-*), and the *-t* was originally itself the mark of the 3 sg.⁶ The situation is the same in the preterite, from the point of view of morphological process. We have the following paradigm for the preterite of *kardan* 'do':

<i>kardam</i>	<i>kardim</i>
<i>kardi</i>	<i>kardid (kardin)</i>
<i>kard</i>	<i>kardand (kardan)</i>

The history of these forms is well-known;⁷ we see the beginnings already in Old Persian *manā krtam*. The formal

⁵ I take the term 'substantive' verb from Irish grammar, where the substantive verb is grammatically opposed to the copula. The latter corresponds functionally to the Persian enclitic forms 1-3 sg. *-am -i -ast (-e)*; cf. G. Lazard, *Grammaire du persan contemporain* 132 (Paris, 1957). For the opposition between substantive verb and copula in general, see the study of Benveniste, "Etre" et "avoir" dans leur fonction linguistique', *BSL* 55.113-34 (1960).

⁶ Cf. P. Horn, *Grundriss d. iran. Phil.* 1.2.153.

⁷ Cf. *ibid.* 148.

origin is the Indo-European *-to-* participle (: Skt. *kṛtá-*) ; but the development of the paradigm presupposes the same morphological process as before : constitution of a 3 sg. zero ending, and generalization of the base (e.g., *kard-*) for all persons, with the suffixation of the appropriate ending.

An additional example of this morphological transformation is furnished by the Middle Welsh imperfect of 'be'. Paradigm :

<i>oedwn</i>	<i>oedem</i>
<i>oedut</i>	<i>oedewch</i>
<i>oed</i>	<i>oedynt</i>

The 3 sg. *oed* is the only form of Common Celtic antiquity ; it continues **esāt*, and corresponds exactly to Lat. *erat*. The regular phonetic treatment completely obscured the relations in the original paradigm, 1 sg. **esām* 2 sg. **esās*, etc. The result was that the 3 sg. *oed* from **esāt* was analyzed as *oed-ø*, and was treated as the base to which the productive imperfect endings of the other persons could be added : *oed-wn*, *oed-ut*, etc.

There are also rare alternative forms of the 3 sg., MW *oedat*, *oedyat*. These illustrate the final possible transformation of a paradigm built out of a 3 sg. form with zero ending. If the 3 sg. ending in other related paradigms has phonetic body, then the original 3 sg. form with zero-ending, which has served as the base for the refashioning of the entire paradigm, may itself receive this suffix of the 3 sg., as in MW *oed-at*, *oed-yat* (VKG 2.338).

We may point out finally several instances in morphologically less complex languages of the 3 sg. imposing its form on other persons, where the result is the complete suppression of the non-3 sg. forms. In Dutch the forms of the verb 'be' are 1 sg. *ik ben*, 3 sg. *hij is* ; of 'have' 1 sg. *ik heb*, 3 sg. *hij heeft*. But in Afrikaans the same forms are 1 sg. *ek is*, 3 sg. *hy is* ; 1 sg. *ek het*, 3 sg. *hy het*. The Old Norse 3 sg. *-r* has spread to all persons, singular and plural, in Danish : *jeg (han, vi, de...) elsker* 'love' (in

Swedish it goes through the singular). Compare also sub-standard English *I, you, he is*. Outside the Germanic family, the same morphological simplification by means of the generalization of the 3 sg. form has occurred in Scottish Gaelic. Compare the independent future (< OIr. present) forms in Leurbost (Isle of Lewis): 1 sg. *kuðə mī*, 2 sg. *kuðə du*, 3 sg. m. *kuði a*, all from OIr. 3 sg. abs. **cuirid* /*kur'að*'.⁸ The structure of the preterite, multi-personal *xuð* from a form originally proper to the 3 sg. alone, is the same.

The analysis of all these forms shows two common features: the development (as in *-yā-s* → *-yās-*) or presence (as in Du. *is*, Scot. Gael. *xuð*) of a zero ending in the 3 sg., and the spread of this 3 sg. form to other members of the paradigm. It is not of relevance whether the word final morph is originally desinence (e.g., I-Ir. *-s*), suffix (e.g. *-t* of Pol. *miał*), or unsegmentable 'root' (e.g. Du. *is*); the process remains the same.

A reconstructed language, however little we may feel we really know about its structure, should be expected to 'behave' in similar fashion to observable or attested languages. To deny this is to deny the ultimate validity of the comparative method and of historical linguistics in general. If we observe a characteristic pattern of paradigmatic transformations and the creation of new morphological classes in attested languages, then it is legitimate to utilize this pattern as a technique in reconstruction. In other words, if the data warrant it, we are justified in postulating the same process of morphological change in unattested, reconstructed languages. The following chapter will be concerned with showing how this morphological transformation can explain the genesis of the sigmatic aorist in its classical form toward the end of the period of common Indo-European.

⁸ Forms from M. Oftedal, *The Gaelic of Leurbost* 236 (Oslo, 1956) = *NTS Suppl. Bind.* 4. See also D. Greene, 'The Analytical forms of the verb in Irish', *Ériu* 18.108-12 (1958).

§ 8. INDO-EUROPEAN *-s-*: THE ORIGIN AND DIFFUSION
OF A MORPHEME

IN the Prolegomena it was stated that a problem in linguistic history can frequently be solved only by an analysis which recovers the historical process of change itself. The initial step is the framing of a hypothesis; what remains is to predict the systematic transformations, in their temporal order, which such a postulated form, morph, or class would undergo, down to the period of historical attestation. This is the technique which I have termed reconstructing forward in time.

In the preceding chapter we noted the theoretical foundations in general linguistics for the critical position of the 3 sg. in the paradigm, as demonstrated by Benveniste. From this we derived the principle of a characteristic pattern for the morphological reconstitution of a paradigm from a 3 sg. form with zero ending. The recognition of such patterns of morphological restructuring is of capital importance in the understanding of the historical process of linguistic change; the facts deducible from linguistic comparison in the strict sense are often in themselves inadequate for a historical explanation. The present chapter represents an attempt to show how a combination of these methodological principles with a postulation dictated by the comparative facts, can provide a consistent linguistic analysis which is properly historical in nature.

We have seen in chapter four that the sigmatic aorist *-s-* is clearly associated with the middle voice, in its earliest appearances in Greek and Indo-Iranian. The same conclusion is suggested by the development of the *s*-preterite in Tocharian, as discussed in chapter five. The evidence would indicate that this morph *-s-* had a distinct affinity with middle or intransitive value.

In chapters six and seven were noted the various isolated bits of evidence for a 3 sg. ending *-s*, in Hittite and Indo-Iranian. The position of the Hitt. 3 sg. *-š* in the system, as preterite to the *hi*-conjugation, is significant as

well. For the *hi*-conjugation is built out of desinences characteristic of the Indo-European perfect, and the perfect endings themselves are fundamentally identical with those of the Indo-European middle.¹ Hence in Hittite we can speak of *-š* as associated with the perfect-middle-intransitive group of endings, rather than with the present/aorist-active-transitive set which appear in the *mi*-conjugation. Typologically we may also compare the Hittite *hi*-conjugation pret. 1 sg. *-hun* (< *-ha* + *un*), 3 sg. *-š* with Luvian pret. 1 sg. *-ha*, 3 sg. *-ta*. The Luvian ending is */-ta/* < **-to*, and equatable with the Greek 3 sg. mid. *-το*. The presence of *-š* in the *hi*-conjugation, and its equivalence to Luv. *-ta* as well, indicate that the ending *-š* was associated with the middle-intransitive.

It is still, however, unlikely that the original function of IE **-s* was that of a desinence. In Hittite the preterite of the *hi*-conjugation is a relatively recent development, an independent innovation by comparison with the other Anatolian languages. This is proved by the obviously composite origin of the 1 sg. *-hun* < *-ha* + *-un* of the *mi*-conjugation.² The preterite of the *hi*-conjugation was formed from whatever lay at hand, chiefly by utilizing *mi*-conjugation forms. The ending *-š* was at the outset an element of unclear function associated with the middle-intransitive, and charged with the function of a desinence only within Hittite itself.

This *-s* was not originally a desinence in Hittite (or Indo-Iranian or Tocharian); no comparable or parallel forms exist in any Anatolian language, and this 3 sg. *-s* was never part of a system of personal endings. It is isolated. On the evidence of the other attestations of *-s* in Hittite,

¹ Cf. Kuryłowicz, 'Les désinences moyennes de l'indo-européen et du hittite', *BSL* 33.1-4 (1937).

² So, e.g., Sturtevant, *Hitt. Gram.*² 132. The ending *-un* is itself composite, < **-u* + *-n*, as shown by Benveniste, 'Tokharien et indo-européen', *Festschrift Hirt* 2.230. For the phonetics of *-un*, which cannot reflect IE **-m*, see Benveniste, *Lang.* 29.255-62 (1953). The original final *-n* is preserved after vocalic stem, secondarily renewed by the suffixation of *-un*: *iya-n-un* 'I made'. Typologically, *-nun* is parallel to the Vedic nom. pl. *-āsaḥ*.

which were examined in chapter six, this *-s-* was simply part of a root form, utilizable originally as a 3 sg. preterite WITH ZERO-ENDING. In Hittite it was on its way toward extension throughout the paradigm. We have essentially three manifestations: (1) the *damaš-* class, probably the most archaic, where the generalization of *-s-* has been completed; (2) the *ed-* class, where the generalization of *-s-* is incomplete, but partially stabilized by a tendency to appearance before ending in dental; (3) the desinence *-š*, which has been extracted from a small nucleus of inherited forms, where the *-s* was part of the root and the 3 sg. ending was zero. Such an inherited form probably appears in Skt. *dhās*, which can be equated either with Hitt. *daiš* or Hitt. *dāš*.³ It is only secondarily, for the purpose of supplying a 3 sg. to the new preterite of the *hi*-conjugation, that a new morpheme division of *-s* from the root in such cases created a 3 sg. desinence *-s*, which could be extended elsewhere in the system. The original desinence was simply zero.

In his original article on the *s*-aorist Meillet pointed out explicitly, in a remarkable prefiguration of Benveniste's system of the Indo-European root, that the unvarying form *-s-* of the morph 's'explique par ceci que c'est un *élargissement*, non un *suffixe* proprement dit.'

It is this that we make our formal hypothesis: the origin of the *-s-* is to be sought in the configuration of root with final enlargement *-s-*. Since this *-s-* admits of no alternations it must be an enlargement in Benveniste's sense (*Origines* 153). Benveniste has shown that—at least at a certain stage—the enlargement appears after a trilateral root in the second state, e.g., *TR-eT-T* beside state one *TeR-T-*. With enlargement *-s-* we may compare:

- **Hn-ek-s* (Kuch. *neksa*) : **Hen-k-* (Gk. *ἀνάγκη*)
- **pr-ek-s* (Kuch. *preksa*) : **per-k-* (secondary)
- **Hl-ek-s* (Gk. *ἀλέξω*) : **Hel-k-* (Gk. *ἄλκι*)
- **Hw-eg-s* (Gk. *ἀέξω*) : **Heu-g-* (Lat. *augeō*)

We must also reckon with the fact of the appearance of an

³ Burrow, *Indo-Iran. Jour.* 1.61 ff. (1957).

enlargement *-s-* with biliteral roots, on the evidence of Hittite and Indo-Iranian, as in

<i>*dheH-s</i> (Skt. <i>dhās</i>)	:	<i>*dheH-</i> (Skt. <i>dhā-</i>)
<i>*Hei-s</i> (Hitt. <i>p-aiš</i> 'gave')	:	<i>*Hei-</i> (Hitt. <i>p-ai</i>)

A root enlargement had at the outset no functional value. It was simply a phonetic component. The problem becomes one of accounting for the genesis of true morphemes *-s-* and *-s* (the first suffixal, the second desinential) from this situation.

It is clear that in the original situation no element followed the enlargement *-s-*. We know this from the existence of *-s* as a desinence in Hittite and Indo-Iranian, in absolute final position; we know it also for suffixal *-s-*, from the existence of the bare stem *-s-* with zero ending in the Greek sigmatic aorist imperative *-σouv*, where *-ov* is simply an emphasizing particle.⁴

We may consider first the developmental process of the suffix morpheme *-s-*, the sigmatic aorist itself. From the formal point of view the enlargement *-s* is proper to the second state of the root: **pr-ek-s-*. We know that the whole process of extension of the *s*-aorist in late Indo-European and in the dialects, is one of underlining and reinforcing the mark of the aorist function. It is hardly a coincidence that the second state of the root, e.g., *TR-eT-*, is itself in many verbs the only formal mark of the aorist, in opposition to the present built on a state one form *TeR-T-*. This is particularly apparent in set roots *TeR-H-*, where the aorist in the older languages regularly has the second state form *TR-eH-*: Gk. *ἐτλη*, *ἔβλη*, *ἔπλητο*.⁵ By virtue of its position the enlargement *-s* is thus susceptible of being taken as a mark of the aorist function.

The formal process of the constitution of the paradigm is readily understandable in terms of the pattern analysed

⁴ Thurneysen, 'Der indogermanische Imperativ', *KZ* 27.175 (1883).

⁵ This variation in root form, and its functional correlation, has been discussed at length by Meillet, *Cinquantiennaire de l'Ecole Pratique des Hautes Etudes* 169-180 (Paris, 1921).

in chapter seven. The original radical form in final *-s* is reinterpreted as showing a 3 sg. zero ending:

$$*preks \rightarrow *preks-\emptyset$$

On the basis of the new 3 sg. form with zero ending, the rest of the paradigm is supplied, in certain Indo-European dialects, simply by the suffixation of the productive endings of the other persons to the base of the 3 sg.

3 sg. **preks- $\emptyset$* $\rightarrow$ 1 sg. **preks- $m(i)$* , 3 pl. **preks- $nt(i)$* , etc.

The final transformation is the reforming of the 3 sg. itself, and the elimination of the zero ending, by the analogical pressure of other paradigms in the system showing a 3 sg. with phonetic body:

$$3 \text{ sg. } *preks-\emptyset \rightarrow 3 \text{ sg. } *preks-t(i)$$

The endingless form did not disappear from the system entirely; though replaced in the 3 sg. function by a form in *-t(i)*, the zero ending form survived in the function of an imperative in Gk. *-σον*, as we have seen above.

The stable paradigm thus constituted of the type 1 sg. **preks- $m(i)$* 3 sg. *preks- $t(i)$* could be opposed to an equally stable paradigm of the type 1 sg. **prek- $m(i)$* 3 sg. **prek- $t(i)$* . The identity of the unenlarged root (**prek-*) and of the desinences in both brought about a new morphemic segmentation **prek-s- $m(i)$* , and thus the creation of a full-fledged aorist morpheme *-s-*, freely capable of extension elsewhere in the verbal system. We have the sigmatic aorist in its classical form. The only subsequent transformation is one shared by all the aorists in the system, sigmatic or otherwise: the exclusion of the particle *-i* of *- $m(i)$* , *- $t(i)$* , etc., and the consequent restriction to secondary endings alone. This is however a dialectal phenomenon; it did not occur in Celtic, where both **-s- t* and **-s- ti* coexist in the 3 sg., on the basis of a repartition between compound and non-compound verbs.

The constitution of a paradigm in this manner, the classical sigmatic aorist, must be a late phenomenon. It appears only in a part of the Indo-European dialects, and there is no reason for supposing that it was ever developed in the others, e.g., Baltic or Germanic. Chronologically

the creation of a sigmatic aorist must be an innovation of late, dialectal Indo-European, which was completed only after the complete separation of these dialects.

The other implementation of the enlargement *-s* in the verbal system is that of a 3 sg. personal ending, as in Indo-Iranian *-s*, Hittite *-š*. By comparison with the sigmatic aorist, this type is residual, and reflects an older linguistic situation. The conservation of such a form is always either accidental, as in Skt. *dhās* and Hitt. *-š*, or marginal, as in the Indo-Iranian root aorist optative *-yās*. It is impossible to say what the 1 sg. corresponding to Skt. 3 sg. *dhās* would be ; it is not a member of a paradigmatic set, and in Hittite the ending *-š* was simply inserted in a secondarily developed paradigm, the *hi*-conjugation preterite.

We have already sketched above the process of development of a desinence *-s* in Hittite and Indo-Iranian : an isolated root enlarged by *-s*, functioning as a 3 sg. with zero ending (e.g., *dhās-ø*) can be contrasted with the unenlarged root (*dhā-*), which imposes a new morphemic segmentation of the 3 sg. form as *dhā-s*, and the reinterpretation of the *-s* as 3 sg. ending. This process is archaic in Indo-European, and the resultant forms are isolated and residual in the historical languages. But the process has interesting implications for the history and development of the Indo-European personal endings.

When we speak of a 3 sg. zero ending as in *dhās-ø*, this does not exclude the further presence of some element or component which is non-personal in nature. One common such element in Indo-European was *-i*, the deictic particle of the *hic et nunc*. This particle was freely combinable with the personal endings, as in *-m/-mi*, *-t/-ti*, *-nt/-nti*. We know furthermore that the free combinability of this particle existed down through the period of the formation of the individual dialects, since these show divergent utilizations of *-i*. It has been suffixed to the perfect endings *-a -tHa -e* in Italic *-ai -tai -ei* > Lat. *-ī -(is-)tī -i(t)*.⁶ The

⁶ These forms have nothing to do with the mediopassive.

same occurred independently in the Hittite *hi*-conjugation : *-ha -ta* (*-e?) → *-hi -ti -i*. In Slavic the same change *-a* → *-ai* is attested in 1 sg. *vědě*.

We know as well that IE *-i* was combinable with a 3 sg. zero ending, as is proved by the Greek thematic 3 sg. present $-\epsilon\iota < -\epsilon + \iota$, where $-\epsilon$ is simply the thematic vowel. The Hittite *hi*-conjugation 3 sg. *-i* may also contain deictic *-i* suffixed to a zero ending. The deictic *-i* alone, suffixed to the bare root with zero ending, occurs finally in a very archaic category in Indo-Iranian : the 3 sg. aorist passive. The most archaic form of this class in the Rig Veda is *jani* 'was born', which shows the absence of the secondary *vṛddhi* as in *jāni*. The augment (*ájani*) is likewise secondary, subsequent to and conditioned by the identification of this form with the aorist system. To my knowledge this explanation of the Sanskrit aorist passive has not been proposed before ; but it will most adequately account for both the formal and the functional situation.⁷ The interpretation of the personal ending as zero, with the suffixation of a deictic particle, explains why the form is only a 3 sg., and why there is no complete paradigm. Functionally, the type is only secondarily a passive, and the basic value is that of an intransitive ; cf. Whitney, § 846, who points out that the form is passive only if the verbal base is transitive. What this implies is that the form is in origin simply the bare root, the neutral verbal notion alone, in the 3 sg., the non-personal form, with zero ending. The *-i* is only an emphasizing particle which has become obligatory, as in the athematic imperative in *-dhi*.

The basically neutral, intransitive value of the bare root form with 3 sg. zero ending which has developed to the Indo-Iranian aorist passive, is thus directly comparable to the basically neutral, intransitive value of the sigmatic aorist in its earliest manifestations, which we have discussed

⁷ For earlier attempts at an explanation see Thumb-Hauschild, *Handbuch d. Skt.* 1.2.298-9, with the references given there. The solutions proposed are neither formally nor functionally satisfactory.

above. The form in *-s* is likewise in origin a bare root form with 3 sg. zero ending; the only difference is that the root is more complex, being enlarged by *-s*. But both types show in origin the same characteristic neutral, intransitive value; they simply predicate the existence of a verbal action.

The Indo-Iranian aorist passive shows the bare root form with 3 sg. zero ending, suffixed by the particle *-i*; the forms of the type *dhās* show the bare root (enlarged by *-s*) with 3 sg. zero ending, but without the particle *-i*. The parallelism is even closer. For the free combinability of *-i* with zero ending makes an alternation $R + -s / R + -s-i$ predictable for Indo-European. We have seen how a new morphemic cut created a 3 sg. ending **-s*, occurring in Hittite, Indo-Iranian, and vestigially in Tocharian (*neksa* < *nek-s* + *ā*). In fact, a vestigial 3 sg. **-si* exists dialectally in two Indo-European languages as a 'primary' ending: Tocharian and Germanic. In Tocharian A we may compare 3 sg. *pälkäš* < **bhlǵ-si* from *pälk-* 'light, shine': Lat. *fulgeō*, Gk. *φλέγω*. The ending is not found in Kuchean. In Germanic we may compare the Old Norse 3 sg. (and 2 sg.) *brýtr* 'breaks' < Gmc. **breutiz*, IE thematic *-esi*, or Northumbr. *findes* (: *findeþ*).⁸ This analysis of these forms as originally 3 sg. eliminates the necessity of assuming a transfer from 2 sg. to 3 sg., with Krause, *loc. cit.*, which is contrary to the observable nature of analogical extension in a paradigm. In Old Norse the *-r* < **-si* has spread to the 2 sg. from the 3 sg. and fills both functions, just as Hittite *-s* or Indo-Iranian *-s* in the precative; but it is the 3 sg. function which is basic, as appears from the position of Toch. A *-š*, or Skt. *dhās*. In Hittite the result of the encroachment of *-š* on the 2 sg. function was the elimination of an earlier 2 sg. characterized by a *-t-*, which is preserved in the 2 sg. mid. pres. and pret. *-ta(ti)*, the 2 sg. *hi*-pres. *-ti*, and in the unique 2 sg. *hi*-pret. *paitta* 'you gave', which doubtless shows the original form of the ending. On the other hand, where the *-s* was not

⁸ Forms from Krause-Thomas, *Toch. Elem.* 259.

extended from 3 sg. to 2 sg., the original 2 sg. ending in *-t-* was preserved, as in Tocharian A 2 sg. *pälkäät*, 3 sg. *pälkäš*, and Hitt. 2 sg. *paitta*, 3 sg. *paiš*.

The process of creation of a desinence from a root enlargement must have been widespread in Indo-European. Hirt (*Idg. Gram.* 4.104) has rightly compared Ved. 3 sg. *dhāt*, *dhāti* with Lat. *sacer-dōt-*, or Gk. 3 sg. *ἔγωγε* : *ἄγρωτ-*. The process is the same, and structurally *dhāt-ø* is identical with *dhās-ø*. It is perhaps possible finally that the classical Indo-European 2 sg. ending *-s(i)* represents the old 3 sg. form, ousted from 3 sg. to 2 sg. by the encroachment of a newer 3 sg. *-t(i)*. Such rearrangements must have taken place : the 1 sg. *-u/-wi* parallel to *-t/-ti*, *-s/-si* which appears in Hitt. 1 sg. pret. *-u-n*, Kuch. *-w-a*, Luv. *-wi*, has elsewhere in Indo-European been ousted from the 1 sg. by the pressure of the new ending *-m/-mi* ; it survives only in the dual : Skt. *-va*, OCS *-vě*. This ending *-u/-wi* is itself only a root enlargement ; Ivanov (*Tox. Jaz.* 17) has rightly compared Kuch. 1 sg. *nekwa* with Gk. *νεκύς*. On the basis of comparisons of this sort, together with an understanding of the functional transformations and transferences which have reshaped these paradigms, we can see back to a far more fluid and flexible state of affairs in the system of the Indo-European verb. The rigid paradigmatic structure for the three persons of the singular, *-m(i)* *-s(i)* *-t(i)*, belongs only to the latest period of Common Indo-European, and was completely achieved only after the separation of the dialects.

There remains the question of what was, in fact, the original function of an enlarged root form such as **preks*. To such a question one can offer only more or less unverifiable hypotheses. The interpretation of such a form as showing a zero ending is sufficient to mark the form thenceforth as verbal, with the consequences which we have described. But when we consider the neutral, intransitive value still present in such forms in the historical period, as well as the formal identity of *-s* with the mark of the nominative singular, then it is hard to avoid the supposition that the formation was originally nominal.

We may tentatively suggest that such nominal forms could be used simply predicatively:

**Hneks* 'unnatural death (occurred)'

**preks* 'asking (occurred)'.

The syntactic point of contact between the nominal and verbal expression could have been furnished by the nominal phrase, where no verb at all is present. A good typological parallel is furnished by the history of the Persian preterite, where the finite forms 3 sg. *kard*, etc., are all derived from a nominal form *kṛta*- 'done', and the original locus of diffusion was the nominal phrase, as in OP *ima tya manā kṛtam* 'this is what (was) done by me'. Such an originally nominal form thus has been functionally differentiated into a verbal form (Pers. *kard* 'fecit') and a nominal form (Pers. *kard-a* 'factus'). By the same token, at an earlier stage, we could have had a similar differentiation into verbal forms, **Hneks-ø*, **preks-ø* (Kuch. 3 sg. *neksa*, *preksa*), and nominal forms **Hneks*, **preks* (Lat. *nex*, *prec-ēs*).

This view of the functional identity of verbal and nominal expression in such a case as **Hneks*, **preks*, receives some measure of confirmation from Hittite. In the Kikkuli-text⁹ we have as indications of time, such equivalents as *mahhan-ma lukkatta* 'when it becomes day' (3 sg. verb) and *lukkatta-ma* 'the (next) morning' (adverb), or *mahhan-ma nekuzzi* 'when it becomes evening', and *mahhan-ma nekuz mehur kišari* 'id.', with 3 sg. *nekuzzi* 'becomes evening', and 3 sg. *kišari* 'becomes' with the nominal *nekuz mehur* 'evening-time'. Compare also the simple nominal *nekuz mehur-ma* 'in the evening'. The distinction between 3 sg. *lukkatta* and adverb *lukkatta* may be secondary; and the 3 sg. verb *nekuzzi* < **nek^w-ti* simply has the deictic particle *-i* suffixed to the same enlargement *-t* which furnishes the nominal form **nek^w-t-* of Hitt. *nekuz* (**nek^w-t-s*). Compare also **leuks* in both Kuch. 3 sg. *lyauksa* and Lat. nom. sg. *lūx*. The difference between these two and Hitt. *lukkatta* is ultimately only one of choice of enlargement, **leuks* : **leukt*.

⁹ A. Kammenhuber, *Hippologia hethitica* 265-72 (Wiesbaden, 1961).

Celtic

La comparaison permet, dans la mesure indiquée, de 'restituer' la 'langue commune' dont les langues d'une même 'famille' sont les formes prises au cours du temps. Mais il reste à se rendre compte de ce qui s'est passé entre l'époque de 'communauté' et la date où les langues commencent d'être attestées en fait. Le problème est difficile, souvent insoluble.

Meillet.

§ 9 THE SYSTEM OF THE PRETERITE IN OLD IRISH

THE traditional description of the formation of the preterite in Old Irish, as exemplified by Rudolf Thurneysen's masterly *Grammar of Old Irish* (415-37), distinguishes three fundamental categories: the *s*-preterite, the *t*-preterite, and the suffixless preterite. Thurneysen further subdivides the suffixless preterite into two groups, a reduplicated and an unreduplicated, both of which share the same endings. The distribution of these three formations of the preterite stem is, roughly speaking, as follows: all weak verbs have the *s*-preterite; strong verbs in certain root final resonants or *-g* have the *t*-preterite; and all other strong verbs have the suffixless preterite.

Thurneysen's analysis is, in the main, both adequate and efficient. But in his handling of the third group, the unsuffixed preterite, he has occasionally confused historical and descriptive facts in the repartition between reduplicated and unreduplicated classes, leading him to consider as 'forms with peculiar reduplication' certain groups of forms which in fact do not exhibit reduplication at all, but rather a long vowel preterite in *-ē-* (before non-palatalized consonant). On the other hand, his unreduplicated class sets up as parallel formations the preterite in *-ā-* and the

preterite in *-ī-*, as well as a very interesting group of anomalous forms, whereas the *-ī-* preterite is by its formation—correctly analyzed by Thurneysen—on exactly the same chronological level as the preterite in *-ē-*, but markedly younger than that in *-ā-*. Similarly the anomalous group, aside from hesitating about two *ā*-preterite forms, succeeds in masking the Irish evidence for a very significant structural principle of the morphology of the Celtic verb : the regulation of the appearance of the reduplicating syllable. The net result of the procedure is to misrepresent the complexity of the Old Irish preterital formations, to obfuscate certain clear principles of formal organization, and to introduce unnecessary confusions and misapprehensions into the historical problem of the genesis of these formal classes. Like so many other attempts at combining descriptive and historical data and analysis, it succeeds here only in falling between two stools.

However, by the technique of proximate and internal reconstruction it is possible to separate clearly these chronologically earlier and later formational types of preterites in Old Irish as we have it preserved. This is, in fact, principally indicated already by Thurneysen in his notes on the origin of some of the types, though he does not concern himself with their relative chronology. The later types, such as the *-ī-* preterite or the *-ē-* preterite, are universally attributable to the immediate or eventual effects of the phenomenon known as lenition. This phonological development has been dated most cogently to the second half of the fifth century A.D.; consequently, the development of these phenomena to the status of morphological marks belongs to the Primitive Irish period, and lies outside the scope of a work dealing with the *origins* of the Celtic verb. I hope to present at some future date a detailed analysis of the constitution of the Primitive Irish verb.

With the isolation of the relatively recent, Primitive Irish layer of preterital categories we are left with a substantial residue of forms, still within Thurneysen's three-fold classification. The recent formations are limited in

extent ; the remaining formational types include the great majority of Old Irish primary verbal roots, as well as all the derivative verbs, principally denominative, which constituted the single unsuffixed productive type in Old Irish of *a-* and *i-* weak verbs, i.e., with a stem in non-palatalized or palatalized consonant respectively.

Among these remaining forms of the preterite in Old Irish we may distinguish five morphological types. These are, in the terms of traditional Irish and Celtic grammar, (1) the *s*-preterite, (2) the *t*-preterite, (3) the reduplicated preterite, and (4) the *ā*-preterite, and to which I add, in Indo-European terms, (5) the radical and thematic aorists. In a descriptive analysis of Old Irish, forms from the last category may appear, depending on the individual lexeme, in certain of the first four categories, where the preterital function is preserved, or may also appear as presents.

All but the fifth of these are Common Celtic formations, attested both in Goidelic and Brittonic. But the nearly complete abolition of complex primary verb morphology in the Brittonic languages, by the time of our earliest extended records, has reduced the value of their evidence by and large to only a corroborative one, however precious. Hence if Brittonic shows no evidence for a type already represented in the more archaic Goidelic only feebly and that by mere fossilized remnants not structurally organized, this may safely be attributed to chance and the general Brittonic elimination of irregular and isolated archaisms.

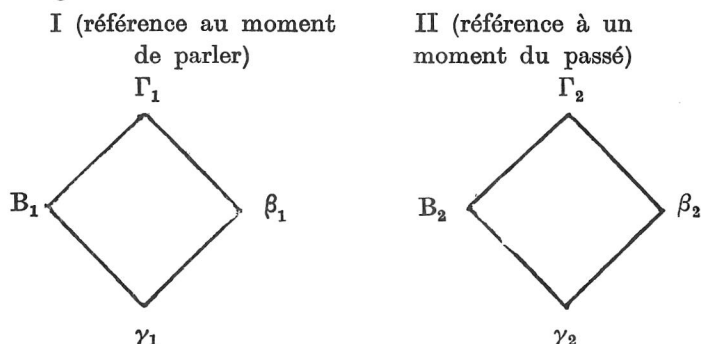
It is most expedient to group these preterital types according to their origin in formal terms. These five Common Celtic preterital categories, with the addition of a sixth morphological type, the *s*-subjunctive, fall into three distinct rubrics :

- (1) sigmatic formations : *s*-subjunctive, *t*-preterite, and *s*-preterite, all historically *s*-aorists.
- (2) reduplicated and *ā*-formations : historically perfects, with and without reduplication.
- (3) isolated historical root and thematic aorists.

These three types go back to distinctive Indo-European types ; in other words, they are, within the Celtic family of languages as a whole, inherited categories. It is the first of these groups, the sigmatic aorist and the precise details of its history, with which Part Two of the present study is concerned. The remaining two, as well as the categories discussed above which belong to the Primitive Irish period, I expect to treat in a subsequent study.

§ 10. SKETCH FOR A FUNCTIONAL HISTORY OF THE CELTIC VERB

In the Note liminaire to his *Apophonie* (24 ff.), Le système verbal de l'indo-européen, Kuryłowicz presents a model designed to illustrate the interrelations of theoretical generic categories in the verb. It is this:



This is, in essence, a three-dimensional figure : the symbols of each quadrant correspond to distinctions on the aspectual plane ; I and II correspond to the two terms of the temporal plane. The aspectual states which he sets up are : imperfective (B), perfective (β), 'l'état résultant d'une action accomplie' (γ), and 'le présent (temps) général' (Γ). Kuryłowicz apparently envisioned this as a purely theoretical model, superimposable on any language,¹

¹ I have criticized this procedure at some length in a review of *L'Apophonie*, *Lg.* 34.381-98 (1958), to which the reader is referred. It is also possible to enlarge the system by a third quadrant referring to the future, as in V.V. Ivanov and V.N. Toporov, *Sanskrit* 98-9 (Moskva, 1960). To this extension the same objections can be raised.

and not as a descriptive model dictated by the exigencies of any given language system. Yet the fact remains that the nature of the aspectual correlations envisaged by Kuryłowicz shows that his schema was modeled on the verbal categories of traditional Indo-European as reconstructed from Homeric Greek and Vedic Sanskrit, and what is most significant, not only for the functional correlations of such a language system, but also for the forms. What we have in Homer and the Vedas leads us to reconstruct for traditional Indo-European precisely such a quadrant as Kuryłowicz's schema I, where each functional structure point has a corresponding formal category. Thus: Γ_1 IE (athematic) present, β_1 IE aorist, γ_1 IE perfect, B_1 IE iterative-durative suffixed present. For this reason it is justifiable and indeed fruitful to regard this schema as applicable to Indo-European not merely as a theoretical model but as a descriptive system.

A brief inspection of the verbal categories of the earlier Indo-European languages shows that the second parameter of Kuryłowicz's schema, the 'référence à un moment du passé', is only partially complete, in other words, that there is not the unitary correspondence of formal category to functional structure point which we can observe in schema I, the 'référence au moment de parler'. The only two points formally expressed in Greek or Vedic are B_2 and γ_2 , imperfect and pluperfect, and of these two the pluperfect has long been recognized as an innovation of the individual languages. This leaves for late Indo-European proper only a single formal class (B_2) in the whole second quadrant—an unrealistic situation. It is furthermore no coincidence that the imperfect (B_2) is the only case in the system which is formally characterized by the desinences alone: the opposition $B_1 : B_2$ is marked only by the difference of primary and secondary endings, 3 sg. *-ti/-t*.

Now on the evidence of such archaic categories as the Vedic injunctive, which shows only secondary endings, or the Vedic subjunctive, which shows both sets, this distinction did not originally convey a temporal opposition (present/past) but more likely one of deixis; the form

with *-i* insisted on the *hic et nunc*, whereas the simple form did not.² A transformation of the optional use of deictic *-i* with the present to the obligatory use of this morph with the functional present is readily understandable, and such a transformation would automatically imply a repartition *-(t)i* present/*-(t)* non-present (past).

Kuryłowicz himself has made what amounts to a tentative suggestion that this distinction of endings originally reflected the opposition $B_1 : \Gamma_1$ (*Apophonie* 32); if this is accepted, then it would still follow as a corollary that this formal expression of the opposition $B_1 : B_2$ must be posterior to that of $B_1 : \Gamma_1$.

This suggestion of Kuryłowicz's is supported further if we assume that the Vedic injunctive with its secondary endings continues the form proper to the undifferentiated Γ_1 . As Thurneysen recognized in 1883 (*KZ* 27.174), the injunctive represents the oldest layer in the Indo-European verbal system. It does not partake of any temporal oppositions, and the temporal value of present, past or future is dependent upon the context.

Looking at the extraordinary functional disequilibrium of the system now usually recognized for Indo-European with the imperfect included, it is difficult to avoid the conclusion that Indo-European proper had originally only a single quadrant of verbal oppositions, and that Kuryłowicz's quadrant, the 'référence à un moment du passé', is a secondary development. The imperfect, insofar as it is purely a past of the durative-'imperfective' B_1 , must be a later accretion to the system, as it implies a thoroughgoing functional opposition in a purely temporal correlation, for which there is no other evidence in the system. Originally the temporal past must have been simply a 'variante sémantique combinatoire' of γ_1 , the perfective form, the Indo-European aorist, and of Γ_1 , the 'general present'/injunctive.

² Cf. also A. Martinet, 'Linguistique structurale et grammaire comparée', *Travaux de l'Institut de Linguistique* 1.1-21. (1956).

Viewed in this light the process of the historical development of the second parameter or quadrant of temporal remoteness—which has become the basic correlation already in the Hittite verbal system, for example—becomes an interesting and significant problem. The directions of development were fundamentally different in different dialect groups; but it is clear that the creation of the additional parameter, the second quadrant, was not accomplished in a unitary way in the period of common Indo-European.

In some cases it is possible to see how this development has come about. In Greek and Indo-Iranian the so-called augment tenses of the past, the imperfect corresponding to B_2 , and the aorist corresponding to Γ_2 and β_2 (earlier only to β_1) arose out of the use of 'injunctive' forms (with secondary ending) of the present and aorist³ stems in the function of a narrative tense.

This becomes evident when we consider the origin of the augment ϵ -. Formally, the augment corresponds exactly to the Luvian sentence connective a - ($< *e$); its primary and original function is that of sentence connective in consecutive narration. Functionally, the augment is equatable with OIr. *no*; it is used in combination with secondary endings, OIr. impf. *no-bered* = ϵ - $\phi\epsilon\rho\epsilon$. We know that functionally, Luv. a - is identical with Hitt. *nu*, and that formally, Hitt. *nu* is identical with OIr. *no* ($< *nu$). We may set up a square as follows including the

³ Ivanov and Toporov, *Sanskrit* 115, suggest that the injunctive is the predecessor of the entire indicative system, present, imperfect, and aorist. They are surely right in maintaining the original absence of temporal oppositions in the verb; but the existence of the perfect implies at least one aspectual correlation in the system, and I hesitate to assume that present and aorist stem were originally one and the same. For this reason I assume that a correlation of perfectiveness did exist in at least some forms in the system as far back as we can reconstruct. The present of aspectually neutralized injunctives does not exclude aspectually marked injunctives, and in Vedic there are approximately as many injunctives from the present stem as from the aorist stem. Cf. L. Renou, 'Les formes dites d'injonctif dans le R̥gveda', *Étrennes Benveniste* 65 (Paris, 1928).

augment, illustrating both the formal and functional identities:

IE <i>é</i>	—	Luv. <i>a</i>
OIr. <i>no</i>	—	Hitt. <i>nu</i> ⁴ .

Old Irish *no* reflects both the primary function of sentence connective and the secondary function of accessory mark of the narrative tense. The first is continued in the use of *no* as an empty preverb to infix pronouns; originally the sentence began with *nu*, followed by enclitic object, and the verb came at the end of the clause. This structure is still faithfully mirrored in such Old Irish sentences with 'tmesis' as *no-m choimmdiu -coíma* 'the Lord cherishes me', which can be directly compared with a Hittite sentence such as *nu-mu* ^d*Ištar* GAŠAN-YA *kaneššan harta* 'my lady Ishtar cherished me'. But the function of sentence connective was lost with the fusion of verb and preverb in Celtic, and *no* was simply subordinated to the other preverbs *ad*, *con*, etc. In the secondary function, OIr. *no* appears with the

⁴ These are not the only sentence connectives of Indo-European, nor the only evidence for IE **e*, **nu*. The latter is preserved in one form in Latin: *nudius tertius* 'day before yesterday'. This adverb is actually a nominal sentence *#nu dius tertius#* 'and it is the third day', as astutely recognized by J. B. Hofmann, *IF* 42.77 (1924). It is directly comparable to a Hittite nominal sentence such as *#nu ITU 10 KAM#* 'and it is the tenth month'.

Other sentence connectives in Indo-European are **to*, **so*, which appear in Archaic Hittite *ta*, *šu*. Both recur in Old Irish: *to* (functionally in complementary distribution with *no*); *se* in *se-ch is* 'and it is' = *no-ch is* 'id'. Both *ta* and *sa* function commonly as sentence connectives in Vedic, particularly in the Brahmanas. The form **so* is preserved in Mycenaean Greek as a connective, in the form *ho*; it is the hitherto obscure *o* (*jo*) prefixed to verbs and other words, at sentence initial position, e.g., *ho-agrēse* 'and he took' (Ventris-Chadwick 176). The connective value for *ho* is proved by the negation of the verb in a parallel passage in the same tablet: *ou-kwe agrēse* 'and he did not take', when *-kwe* clearly has the same content as *ho*. Aside from Mycenaean, *ho* appears as a component of the demonstrative *oīros* (Boeot. *oīrā*, *oīrov*) < *#ho-u-to-s*. Originally only the *-to* was the pronominal stem; *ho* is a connective, occupying initial position, and *u* is an enclitic particle regularly in second position, as with Ved. *u*, Goth. *u*.

These connectives and related syntactic problems in Indo-European will be taken up in detail in a paper to appear in *Celtica*, vol. 6 (1962).

Old Irish secondary tenses : imperfect, subj. II, fut. II. In this secondary function, OIr. *no* is identical with the augment *e* occurring in Greek, Armenian, and Indo-Iranian, where it appears with the tenses with secondary endings : imperfect, aorist, pluperfect. In the latter three languages, the augment is always directly prefixed to the verbal form ; it cannot be in tmesis. But the situation in Luvian, where *a* is separated from the verb, shows that this is a secondary development, and the same can doubtless be inferred from the unaugmented forms in Homer and the Veda, where it is likely that the separated 'augment' *é*, originally a sentence connective in initial position in the sentence, has been replaced by some other connective or copulative (e.g., Gk. *ἐὶ*, *τε*). It is the 'univerbation' of *é* and injunctive forms of the present stem (i.e., with 'secondary' endings) which is responsible for the creation of the formal 'imperfect' in Greek, Indo-Iranian, and Armenian : *ἔφερε* = *ábharat* = (aor.) *eber*. But it is only in Greek and Indo-Iranian (and perhaps independently in each) that the formal opposition of such forms built on the present stem with similar forms built on an aorist stem was completely carried out, with the development of a thoroughgoing functional opposition of imperfect and aorist of the formal type *ἔλειπε*/*ἔλιπε*, *árecat*/*áricat*. The form *eber* in Armenian was at the outset simply a preterite, opposed to the present *berē* < **bhereti*. It is only with the creation of *berēr* (< **bheretor*?⁵) that Armenian developed a functional contrast imperfect/aorist (*berēr*/*eber*), collectively opposed to the present, just as in Greek and Indo-Iranian. The imperfect of Greek and Indo-Iranian, as in *ἔφερε*, *ábharat*, is an innovation from the Indo-European point of view, just as much as Armenian *berēr*, OCS *nesě-axŭ*, or Lat. *legē-bam*. The imperfect **é-bher-et* is not an Indo-European form.

In Indo-European there were in most cases differences of formal expression for each of these functional structure

⁵ Meillet, *Esquisse* 2 127.

points, particularly of the general present and the aorist. We would expect the same in any natural language. But the functional position, the relation to other elements of the system, remained the same. Celtic, like all other Indo-European languages, shows evidence for this formal diversity, particularly in the formation of the present; but by and large, as is to be expected in a group of languages attested only to any large extent in the Middle Ages, such variants were largely eliminated; the tendency was to create a uniform derivational type.

In the strong (non-derivative) verb, the only case where we may properly speak of inherited forms, the present still exhibits numerous divergent formations (suffixes *-yo/i̇-*, *-na-*, *-nu-*, nasal infix), but the basic type is the single thematic formation *-e/o-*, e.g., *berid* < **bhereti*. The Celtic forms filling the other three Indo-European functional structure points are essentially unvarying. The iterative, relatively rare, is the familiar type **louk-eye-*, with root vocalism *o* and Celtic suffix *-yo/i̇-*.⁶

The perfect continues the Indo-European perfect, though with different distribution of the reduplicating syllable, and a later and independent development of a long-vowel perfect *TāT-*.

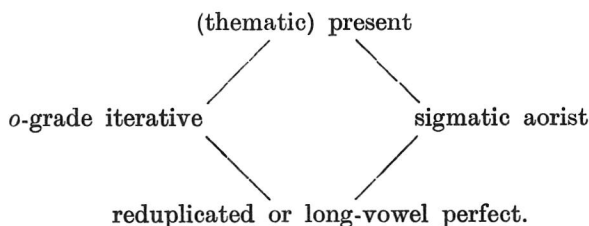
The reduplicated perfect and the *ā*-perfect were originally in complementary distribution according to the structure of root, as is still essentially the case in Old Irish: roots with structure *TeT-* (i.e., with root vowel *e*) formed the *ā*-perfect, and possibly roots with structure *TeR-* as well (subsequently eliminated in favour of the sigmatic aorist > *t*-preterite). The *ā*-perfect from the beginning lacked the reduplicating syllable; in its distribution the situation strongly recalls that of Germanic. The origin of the *ā*- is to be sought in a new lengthened grade (*a* → *ā*) of the morphological zero grade in *a* (*TaT*) of the perfect, after the abolition of paradigmatic ablaut. Typologically it

⁶ For the suffix form *-yo/i̇-* cf. Meillet, *Dialectes indo-eur.* 109 ff. (Paris, repr. 1950).

corresponds thus to the preterite plural of the Germanic fifth class, e.g., Goth. *gebum*, which also shows a morphological lengthened grade, though the detail is obscure.⁷

The aorist, in conformity with the trend of development in numerous Indo-European languages analysed by Meillet and discussed in Part One, is almost universally sigmatic. There are only a handful of Celtic forms derived from Indo-European aorists which do not continue the sigmatic type; such are OIr. *do-cer* 'he fell' < **kerH-t* (athematic set aorist); *luid* 'he went' < **ludhet*, perhaps *buig* 'he broke'⁸ (thematic aorists); *ro-lá*, suppletive perfective present to *-cuirethar* 'puts', the original root aorist of the structure *ReH-* to the nasal infix present **l-na-* (structure *R-n-eH-*) remade in *ad-ella* 'visits'.⁹ But these verbs are residual, fossil forms, and have no place in the living formal organization of the verbal system.

From the Indo-European situation as described, then, Common Celtic inherited an identical functional alignment of categories; formally the configuration was as follows, for the basic type:

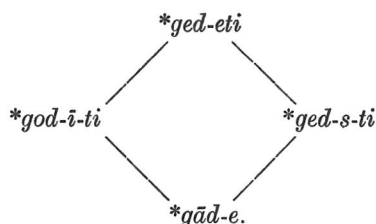


⁷ For a similar case of morphological lengthened grade in *-ā-*, cf. the Latin types *sāg-iō*, *con-tāg-iūm*, *clād-ēs*, discussed in § 3 above.

⁸ The preterite *-buig* may also be an *s*-aorist to an iterative-causative **buigid* beside *bongid* 'breaks'; cf. *fo-luigi* beside *fo-loing* 'supports', and M.-L. Sjoestedt, *Les itératifs-causatifs dans les langues celtiques*, *Mélanges Vendryes* 323-40 (Paris, 1925). Etymology in fact supports this analysis; *bongid* is cognate with Arm. *bekanem*, Skt. *bhānakti*, IE **bheg-*, to which an iterative would be in Celtic **bog-yo/i-*, just as *-loing* beside *-luigi* continues the Indo-European root **legh-*, despite the peculiar nasal infix structure and vocalism, which must be a Celtic innovation.

⁹ See on this form 'A preliminary history of the OIr. primary *a*-verbs', *For Roman Jakobson* 619.

We may illustrate this with the prototypes of the various forms of OIr. *gudid* 'prays', Celt. **ged-*, IE **g^whedh-*; forms are 3 sg. absolute:



This configuration represents the aspecto-temporal plane. To complete the roster of forms of the verb found in Irish which are reconstructible to an Indo-European prototype, we must add the two formations which together comprise the modal plane in Common Celtic:

desiderative (> OIr. future)	<i>*gi-ged-s-ti</i>
optative (> OIr. <i>ā</i> -subjunctive)	<i>*ged-ā-ti</i>

There is no indication that the modal plane in Common Celtic partook of the aspecto-temporal oppositions illustrated in the quadrant; rather we have a formal mark of the contrary, in the fact that the stem of the *ā*-subjunctive is still in Old Irish independent of the present stem, e.g., *crenaid* 'buys', subj. *-cria*. This is characteristic of the *ā*-subjunctive in certain archaic Latin forms (e.g., *tagam*, *aduenat*) where the subjunctive stem is independent of the present, and we may legitimately conclude that this is the inherited situation. The same holds true for the subjunctive in the earliest Sanskrit, as has been brought out by L. Renou, 'A propos du subjonctif védique', *BSL* 33.5-30 (1932). The subjunctive is independent of present and aorist alike.

The form **gedā-* is reconstructible as part of the original system; the elimination of the *ā*-subjunctive in almost all the roots in final stop (*TET-*) is a subsequent and specifically Celtic innovation, as will appear from the detailed discussion below. It is likely that we should regard the occasional weak

a-verb presents of verbs which were clearly originally strong, such as *lemaid* 'dissolves' < **leg-ā-ti* beside *lecht* 'death' < *leg-to-*, W *dilein* 'destroying' > **di-leg-ni-*, as secondary renewals of the conjugation by a functional transfer of the *ā*-subjunctive to the (formally identical) productive *ā*-present indicative.¹⁰ We have a few other isolated examples in Celtic of the recreation of a verb on the basis of the original subjunctive, a process of lexicalization via demodalization: cf. MIr. *fóirid* 'helps' < subj. 3 sg. *-fóir* of *fo-reith*; ¹¹ *as-gúsi* 'chooses' < subj. stem *güss-* of *-goa* 'chooses'; ¹² Welsh *techaf* 'I flee' < an *s*-subj. **tek-s*.¹³ Such forms as **leg-ā*-thus afford additional evidence for the use of the *ā*-subjunctive with *TeT* roots as well, which we expect a priori in any case from comparison with the Italic *ā*-subjunctive (e.g., *legat* to the radical homophone *legere* 'read') and from OIr. *-aga* = Lat. *agat*.

With a few exceptions, which are residual, these six forms represent the sum of the formal inheritance from Indo-European in the Celtic finite verb.

Kuryłowicz's principal object in constructing the functional quadrant we have utilized, is not basically to present a model of a static order; as he emphasizes (*Apophonie* 27), 'ce qui emporte pour nos buts, c'est la possibilité, fournie par nos schémas, d'éclaircir certaines questions d'ordre diachronique'. Basic is his demonstration of the direction of functional innovations in the system; as he shows, the tendency is for the iterative present (B) and for the perfect (γ) to move into the functional zone of the general present (Γ) and aorist (β) respectively, eventually coalescing in function with the latter entirely. This process may or may not be accompanied by the recreation of a new iterative present and/or perfect, which then establishes the quadratic structure anew.

¹⁰ Thus correct the analysis in *For Roman Jakobson* 615.

¹¹ This is to be preferred to the explanation advanced by M. A. O'Brien, *Ériu* 11.159.

¹² Lewis-Pedersen 372.

¹³ *Ibid.* 399; originally suggested by J. Loth, *RC* 38.301, and cf. also Vendryes, *EC* 3.376.

This is precisely the case of the Celtic verb ; in itself an independent testimony of the utility as well as the validity of Kuryłowicz's model. The two formations, iterative present and perfect, developed independently of each other ; but the trend was precisely in the direction predictable in Kuryłowicz's terms.

In the case of the iterative present for the normal thematic present : a salient example is the verb we have selected as exemplum, OIr. *guidid* 'prays' < *god-ī-ti*. The original thematic present *ged-* is still preserved in close composition with the preverb *ne-*. Compare the form *lase ara-n-neget* gl. *orando* < Celt. **ni-ged-et* ; cf. *OIGr.* 523 and the additional forms cited there. The antiquity of this thematic form is evidenced by the fact that the preverb *ne-* is no longer a living part of the language ; its occurrence is residual, restricted to appearance as preverb in close composition before the Celtic roots *stā-*, *sed-* and *ged-* ; purely as preposition it does not occur. But except for a few archaic relics, the general present of this verb is always the originally iterative form *guidid*. Likewise the Celtic root *brenn-* 'boil' shows the present *bruinnid* < **bronn-ī-*. There are a few other such formations in Celtic ; I expect to treat them in a subsequent study. They are few in number, but sufficient to indicate the tendency for the Celtic present to develop according to the pattern established by Kuryłowicz. This view is confirmed in addition by the creation of the same opposition, iterative/general present, in the substantantive verb : OIr. *buid* / *-tá*. At a later stage we have as well the development of a periphrastic iterative as it appears in Modern Irish.

The limited extent of the replacement of general presents by iteratives in Celtic is to be explained by the relatively early shift from iterative to causative—i.e., transitive—value in a large number of verbs of the type **log-yo/ī-* 'lay' : **leg-* 'lie'. This is a development shared by most of the Indo-European languages exhibiting this formation, notably Germanic, Slavic, and Indo-Iranian. In view of the limited number of such formations surviving in Celtic either as

general presents or even as causatives, it is probable that the opposition of iterative and general present had only a potential existence for the great majority of verbs in the language; its actual formal implementation was of relatively limited extent.

On the other hand the Celtic verb must have formed universally both an aorist and a perfect. This is a fact of considerable importance for the question of the linguistic position of Celtic within the Indo-European group: the functional coalescence of perfect and aorist must have been well along in the Common Celtic period. This is proved not only by the persistence of the stem forms, sigmatic and reduplicated or long vowel types, as productive morphemes in both the branches of the Celtic group, but also, more significantly, by the preservation of two distinct sets of desinences (save for 1 and 2 pl.), reflecting the functional opposition long into the historical period. This contrasts noticeably both with Germanic and Italic. The functional coalescence of Indo-European perfect and Indo-European aorist in Italic (e.g., *dixi* : *pupugi*) is of much earlier date; it is attributable to the development in this group of a system of functional oppositions in the verb radically divergent from that of Proto-Indo-European: the contrast perfectum/infectum. In the earliest monuments of Italic we possess, the perfectum exhibits only a single system of endings. The absence of any very clearly discernible pattern of distribution between historically perfect and historically aorist forms in Latin is another mark of the antiquity of their functional coalescence in Italic. By contrast the quasi-absolute regularity of the distribution of sigmatic and reduplicated or long-vowel types according to the root structure in Celtic speaks for a relatively late functional coalescence of the two. In the overall structure of the aspecto-temporal system the Celtic verb is much closer to that of Greek and Indo-Iranian than to that of Italic or Germanic. This fact should be considered with what we know of the migrations from East to West of Celtic-speaking peoples in historic or late prehistoric times.

There remains one additional indication of the original presence in the Common Celtic verb of the specifically perfect function as in Homeric Greek or Vedic Sanskrit, opposed to aoristic or preterital value. This is the verb *ad-ágathar* 'fears', with Celtic base *āg-yo/ĩ-* and deponent endings. This verb is a secondary formation, utilizing the productive suffix *-yo/ĩ-*, to a base **āg-* exactly equatable with the Gothic perfect-present *og* 'I fear'. Historically the form must have been simply a perfect, subsequently remade to formal present to correspond to its presential meaning by the addition of the productive secondary suffix *-yo/ĩ-*. It establishes for Celtic not only the form of a perfect, but the existence of the archaic stative-intransitive functional meaning of the perfect: 'l'état résultant d'une action accomplie' (*Apophonie* 25).

Though we may consider as established the prehistoric existence in Common Celtic of a perfect and an aorist, it is still clear that during the Common Celtic period these two went through the same process of functional coalescence as described by Kuryłowicz: the perfect gradually acquired the functional meaning of the original aorist, and the original four-cornered structure was reduced to a simple opposition:

preterite ————— *present*

The creation of a purely temporal relation *preterite-present* led to the restructuring of the old desiderative formation, originally part of the modal plane, as part of the temporal sequence on a linear scale:

preterite ——— *present* ——— *future*

This linear organization on a temporal scale is similar to that arrived at by other Indo-European languages, such as Post-Vedic Sanskrit. It is characteristic of Proto-Goidelic alone; there is no trace of an original future < desiderative in the Brittonic languages, and we may assume that the system opposing *present-preterite* alone is the last stage which may be spoken of as Common Celtic. The creation

of a new set of secondary tenses is posterior to the separation of Goidelic and Brittonic, as proved by the divergence in the form of the endings themselves.

It is the functional coalescence of perfect and aorist into a single preterite that had the most far-reaching formal consequences in the structural organization of the Common Celtic verb. The second part of this study is concerned specifically with the subsequent development in Celtic of the sigmatic formation which once constituted the aorist of practically every verb in the language. It attempts to analyse in detail the formal consequences of this functional coalescence.

Kuryłowicz has demonstrated in his *Note liminaire (Apophonie 24 ff.)* that this process of functional coalescence may result in two patterns. The form of the old perfect may be generalized for all verbs, and the old aorist may be ousted from the temporal plane to the modal plane, i.e., be charged with a modal function; or the new, single preterital function may be expressed by redistributed forms of both the older functions, perfect and aorist, as in Lat. *pupugi* : *dixi*.

Both of these patterns of development occurred in Celtic. While reserving the precise detail for the subsequent chapters, we may state that the result of this functional coalescence was the utilization of either the old aorist form or the old perfect form in the new function of preterite, with the distribution of the two rigorously regulated according to the structure of the root. Broadly speaking the sigmatic aorist form was generalized in roots with final resonant (type *TER-*) and primary roots in final vowel (type *TERE-*), while all other primary roots (types *TET-*, *TERT-*) generalized the reduplicated or unreduplicated perfect form.

In the case of the roots of the structure *TER-*, the sigmatic aorist morpheme *-s-* was generalized in the transformed shape *-t-* (the *t*-preterite); in the *TERE-* roots it was generalized in the transformed shape *-ss-*. From the latter it spread to the secondary, productive denominative verbs, and furnished these with a preterite stem. In roots

of this structure, thenceforth showing a preterite in *-t-* or *-ss-* from the original aorist in *-s-*, the original perfect simply disappeared. On the modal plane, the old optative in *-ā-* remained, in the function of a subjunctive.

In the case of the roots of the structure *TET-* and *TERT-* on the other hand, the original perfect was generalized in the new preterital function, completely ousting the original aorist from its earlier function. The result of this was that the aorist in *-s-* was pushed from the aspecto-temporal plane to a new function, on the modal plane; it is preserved, in its original form *-s-*, as a subjunctive. In this function the morpheme *-s-* in turn completely ousts the older optative (> subjunctive) in *-ā-*, which disappears entirely from the system of the roots *TET-* and *TERT-*. For such roots it survives only in isolated cases in the lexicon: either where the modal value is lost (e.g., OIr. *legaid* above), or where there was originally no sigmatic aorist to develop subjunctive function (e.g., OIr. subj. *-aga*, where there was no **ag-s-*).

We may thus summarize the history of the sigmatic aorist morpheme *-s-* in Celtic as follows: where it has been reshaped to *-t-* or *-ss-*, it preserves the function of a past tense (preterite); where it preserves the shape *-s-*, it is in the new function of a modal form. The whole development may be taken as an illustration of Kuryłowicz's fourth law of analogy.¹⁴ The new forms are *-t-* and *-ss-*, continuing the primary function; the old form is *-s-*, in secondary function.

§ 11. THE *s*-SUBJUNCTIVE.

THE theoretical foundations of the shift from aspectual value (aoristic) to modal value (subjunctive) have been explained in detail by Kuryłowicz, and the situation of this development within the functional history of the Celtic

¹⁴ 'Quand à la suite d'une transformation morphologique une forme subit la différenciation, la forme nouvelle correspond à sa fonction primaire (de fondation) la forme ancienne est réservée pour la fonction secondaire (fondée)', *Acta Ling.* 5.15-37 (1949) = *Esquisses Linguistiques* 79 (Wrocław-Kraków, 1960).

verb has already been shown in the preceding chapter. This transformation must be understood as a direct one; the pressure of the perfect form assuming the aorist function forced the sigmatic aorist form in one definable sub-class out of the aspectual cadre, and this sigmatic aorist form was retained in the language system by virtue of the assumption of a modal (subjunctive) function. The Celtic *s*-subjunctive thus directly continues the Indo-European *s*-aorist; it is entirely unnecessary and unwarranted to assume the mediation of any hypothetical sigmatic subjunctive or injunctive forms to account for the short root vowel of the sigmatic stem.¹

There is in fact no justification whatsoever for assuming, with Pedersen and Thurneysen, that the Celtic *s*-subjunctive is derived from a sigmatic aorist subjunctive, for reasons of a functional nature. There is no evidence that in Common Celtic a subjunctive of the aorist could ever have been functionally opposed, aspectually or temporally, to a subjunctive of the present. The same holds true for Italic; the modal system was originally independent of the aspecto-temporal system entirely. The proof is furnished by the fact that the modal morpheme *-ā-* in Celtic was not suffixed to the present stem, but to the bare root itself. This we know not only from the Old Irish strong verbs (3 sg. ind. *crenaid*, subj. *-cria* 'buys'), and from comparison with Latin (*adueniō* : subj. *aduenat*), but from the weak verbs as well: *-cuirethar*, subj. *-corathar* 'puts, throws' from stems **kor-yo/ĩ-* (pres. ind.), **kor-ā-* (subj.). Since the modal system was not correlated with the aspecto-temporal system, it follows that no categories such as present subjunctive or aorist subjunctive ever existed in Common Celtic.

The Common Celtic modal system was simply opposed to the indicative system as a whole, by the presence of the feature of subjectivity. The modal forms are aspectually and temporally neutralized indicatives, plus the implication

¹ As do Pedersen (*VKG* 2.355) and Thurneysen, with some reservations (*OIGr.* 391).

of the attitude of the speaker. It is only late in the history of Celtic, after the separation of Goidelic and Brittonic, that a set of secondary subjunctive forms was created, opposed to the primary subjunctive by a correlation of time. This is likewise characteristic of Italic; the symmetrical Latin subjunctive system with a present and a past to both *infectum* and *perfectum* is an Italic innovation, as the forms themselves, and their syntactic usage, indicate. This situation, where the modal system was independent of the aspecto-temporal system, is undoubtedly inherited as such from Indo-European;² the aspectually and temporally characterized subjunctives and optatives which are found in various Indo-European languages, notably Greek and Indo-Iranian, result from innovations of these languages, in large part independently. Hence if no aorist subjunctive existed in Indo-European, and none was developed in Celtic, then the comparison of Irish *s*-subjunctive forms with *s*-aorist subjunctives like Gk. *ἐρύσσομεν* and Ved. *neṣatha* (Pedersen, Thurneysen) becomes specious.

There is finally the formal objection to a subjunctive origin, which would be valid even if an aorist subjunctive had existed in Indo-European. The *s*-subjunctive 3 sg., the basic member of the paradigm, is athematic; and athematic **-s-t(i)* cannot reflect an *s*-aorist subjunctive, which would be thematic **-s-et(i)*. Thurneysen in his earliest published reference to the Old Irish *s*-subjunctive in fact realized that for this formal reason these forms could not be subjunctives; he preferred to take them as reflecting the injunctive: OIr. *for-don-té* < **steigh-s-t* 'er soll' oder 'er wird uns zu Hilfe kommen'.³ Thurneysen's purpose in this study was to demonstrate the primacy of the injunctive in the earliest reconstructible Indo-European, and its greater antiquity relative to the present, preterite, and at

² Meillet, *Esquisse d'une histoire de la langue latine* 30 (Paris, 1933).

³ 'Der indogermanische Imperativ', *KZ* 27.174 (1883)—an extraordinarily lucid study, and one still valid to-day. Compare also his remarks in *KZ* 31.72, 82 (1889).

least certain forms of the subjunctive and imperative. In this he was certainly right, and his study deserves a place of honour as a pioneering work.⁴

But the system of personal endings of the *s*-subjunctive is identical with that of the endings of all of the present indicative, present subjunctive, *s*-preterite, and future. Since the form of the personal ending would be the only trace of the injunctive form, Thurneysen's essentially marginal comparison of the Irish *s*-subjunctive *for-don-té* loses its cogency. That an Old-Irish subjunctive, whether of the *s*-class or the *a*-class, MAY exhibit the semi-modal, 'eventual' value which is frequently found in the injunctive of the Rig Veda and the Gathas, is purely accidental. As I shall show in a future study, the Indo-European injunctive is of critical importance in comparative Celtic grammar, as can be demonstrated both from morphological form and syntactic form : the system and distribution of absolute and conjunct endings and the construction known as Bergin's Law (*Ériu* 12.197-214 [1938]) as well as certain others. But the functional value of the injunctive in Indo-Iranian is *einzel sprachlich* ; it is conditioned by its being opposed in those dialects to both an indicative and a subjunctive, which was not the case in Celtic, nor in Indo-European.

It follows from the remarks above that the derivation of the athematic forms of the Old Irish *s*-subjunctive from an Indo-European injunctive, as well as its derivation from a sigmatic aorist subjunctive, cannot be upheld. For both formal and functional reasons we must assume that the Irish *s*-subjunctive continues a Common Celtic sigmatic aorist indicative, through the mediation of a unitary morphological transformation, as set forth above. The final proof of this is to be found in the distributional analysis of the attested forms of the *s*-subjunctive, *t*-preterite, and *s*-preterite.

⁴ Compare Kurylowicz, 'Injonctif et subjonctif dans les Gāthās de l'Avesta', *Rocz. Or.* 3.164-79 (1925). V. V. Ivanov and V. N. Toporov, *Sanskrit* 115 (Moskva, 1960), have likewise advanced and developed this hypothesis, in the context of the constitution of the Vedic verbal system. Their analysis deserves much further exploration.

We have already indicated in brief, in the discussion of the restructuring of the forms of the *s*-aorist in Common Celtic, that the new, emergent functional position of the old sigmatic form was strictly regulated by the phonological structure of the root to which *-s-* was added. We are now in a position to examine more closely the precise repartition of these forms in the various classes. In problems of historical linguistics, attention to distributional phenomena in the language under investigation represents a basic part of the preliminary process of internal reconstruction; in the case of the Celtic preterite, it is precisely distributional data which permit us in the first place to regard three formally and functionally diverse verbal categories, the *s*-subjunctive, the *t*-preterite, and *s*-preterite, as formally derivable from a unitary source, a Common Celtic sigmatic aorist.

According to Thurneysen, *OIGr.* 380, 'the *s*-subjunctive is formed only by strong verbs whose root or verbal stem ends in a dental or guttural stop or spirant, or (in the present and preterite) in *nn*. All other verbs have the *a*-subjunctive.' Following are the attested forms, given in the Old Irish stem.⁵ Roots of structure *TET*-:

<i>ress-</i>	<i>rethid</i> 'runs'	<i>ret-s-</i>
<i>ess-</i>	(<i>ithid</i> 'eats')	<i>ed-s-</i>
<i>fess-</i>	<i>fedid</i> 'leads'	<i>wed-s-</i>
<i>sess-</i>	<i>saidid</i> 'sits'	<i>sed-s-</i>
<i>mess-</i>	<i>midithir</i> 'judges'	<i>med-s-</i>
<i>gess-</i>	<i>guidid</i> 'prays'	<i>ged-s-</i>
<i>nāss-</i>	<i>naiscid</i> 'binds'	<i>nad-s-</i>
<i>slāss-</i>	<i>slaidid</i> 'smites'	<i>slad-s-</i>
<i>clāss-</i>	<i>claidid</i> 'digs'	<i>klad-s-</i>
<i>snāss-</i>	<i>snaidid</i> 'cuts'	<i>snad-s-</i>
<i>māss-</i>	<i>maidid</i> 'breaks'	<i>mad-s-</i>

⁵ I have given first the Old Irish subj. stem, second the 3 sg. present, and third the Common Celtic morphophonemic shape. I have not distinguished those cases where the subjunctive stem appears only in a compound verb, or where the subjunctive stem appears only in the subjunctive II, since such forms presuppose the existence of an uncompounded, present subjunctive stem.

<i>sess-</i>	<i>in-coissig</i> 'indicates'	<i>sek^w-s-</i>
<i>tess-</i>	<i>techid</i> 'flees'	<i>tek-s-</i>
<i>scess-</i>	<i>scuichid</i> 'comes to an end'	<i>skek-s-</i>
<i>ress-</i>	<i>rigid</i> 'stretches'	<i>reg-s-</i>
<i>sless-</i>	<i>sligid</i> 'strikes'	<i>sleg-s- (?)</i>
<i>-ress-</i>	<i>arco</i> 'I ask'	<i>(p)rek-s-</i>
<i>aness-</i>	<i>aingid</i> 'protects'	<i>aneg-s-</i>
<i>less-</i>	<i>laigid</i> 'lies'	<i>leg-s-</i>
<i>dless-</i>	<i>dligid</i> 'is entitled to'	<i>dleg-s-</i>
<i>sāss-</i>	<i>saigid</i> 'seeks'	<i>sag-s-</i>
<i>māss-</i>	<i>do-for-maig</i> 'increases'	<i>mag-s-</i>

Roots of structure *TERT*:-

<i>cerr-</i>	<i>fo-ceird</i> 'throws'	<i>kerd-s-</i>
<i>mell-</i>	<i>mligid</i> 'milks'	<i>melg-s-</i>
<i>orr-</i>	<i>orgid</i> 'slays'	<i>org-s-</i>
<i>īss-</i>	<i>t-icc</i> 'comes'	<i>inks-s-</i>

with *-ER* = IE *-ei-*, *-eu-* > *-ē-*, *-ō-* (some forms analogical):

<i>tēss-</i>	<i>tīagu</i> 'I go'	<i>tēg-s-</i>
<i>rēss-</i>	<i>con-rig</i> 'binds'	<i>rēg-s-</i>
<i>nēss-</i>	<i>nigid</i> 'washes'	<i>nēg-s-</i>
<i>snēss-</i>	<i>snigid</i> 'drips'	<i>snēg-s-</i>
<i>fēss-</i>	<i>ro-fitir</i> 'knows'	<i>wēd-s-</i>
<i>fēss-</i>	<i>ad-fét-</i> 'relates'	<i>wēd-s-</i>
<i>-fēss-</i>	<i>do-in-fét</i> 'inspires'	<i>swēzd-s-</i>
<i>fēss-</i>	<i>fichid</i> 'fights'	<i>wēk-s-</i>
<i>dēss-</i>	<i>for-ding</i> 'oppresses'	<i>dēg-s-</i>
<i>cēss-</i>	<i>cingid</i> 'goes'	<i>kēg-s-</i>
<i>lēss-</i>	<i>lingid</i> 'leaps' ⁶	<i>lēg-s-</i>
<i>ōss-</i>	<i>oidid</i> 'lends'	<i>od-s-</i>
<i>bōss-</i>	<i>bongid</i> 'breaks'	<i>bog-s-</i>
<i>tōss-</i>	<i>tongid</i> 'swears'	<i>tog-s-</i>
<i>loss-</i>	<i>fo-loing</i> 'supports'	<i>log-s-</i>
<i>bōss-</i>	<i>as-boind</i> 'refuses'	<i>bōd-s-</i>
<i>rōss-</i>	<i>roindid</i> 'reddens'	<i>rōd-s-</i>
<i>lūss-</i>	<i>(ibid)</i> 'drinks'	<i>lūg-s-</i>

⁶ It is structurally not consistent to class this form with the verbs in *-nn*, as in *OIGr.* 389.

Roots in *-nn*:

<i>sēss-</i>	<i>do-seinn</i> 'pursues' ⁷	<i>senn-s-</i>
<i>sēss-</i>	<i>sennid</i> 'plays' ⁷	<i>swenn-s-</i>
<i>glēss-</i>	<i>fo-gleinn</i> 'learns'	<i>glenn-s-</i>
<i>grēss-</i>	<i>do-greinn</i> 'pursues'	<i>greenn-s-</i>
<i>brēss-</i>	<i>do-bruinn</i> 'effervesces'	<i>brenn-s-</i>
<i>tēss-</i>	<i>tennid</i> 'cuts' ⁸	<i>tenn-s-</i>

To these we may add one root in *-s*:

<i>gōss-</i>	<i>do-goa</i> 'chooses'	<i>gōss-s-</i>
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In the Brittonic languages we have only three roots which preserve the *s*-subjunctive: MW *duch* 'dücat' < **deuk-s-*;

⁷ Thurneysen (*OIGr.* 353) is surely correct in taking these two as etymologically distinct, against Pedersen, *VKG* 2.625. The form *sennid* 'plays a musical instrument' is from IE **swenH-*: Lat. *sonāre*, RV *āsvanīt*. The association with musical instruments is in Latin as old as Ennius, *aes sonit* (Scaen. 181 Vahlen); in India it is already in the Rig Veda: *godhū pāri sanīṣvaṇat* 'the gut-string sounds' (8.69.9). Compare also *fidēs* 'string, stringed instrument' with *sonāre* in Propertius 4.7.62. The transitive use 'play' in OIr. *sennid* was independently developed in Italian *suonare*; compare the musical term *sonata*. The verb *do-seinn* 'pursues', with simplex *sennid*, has semantically nothing to do with *sennid* 'plays', though it has fallen together with it in form, by adopting from the latter its lenited initial form *f-*. This verb is to be compared with IE **senH-* in Hitt. *šanhzī*, 'seeks; plans; demands' Ved. *sanoti* 'wins, gets; grants', Gk. *ἀνίω* 'accomplish; get (something, somewhere)'. The apparent variation in meaning among all these forms is actually grammatical in nature, rather than lexical; the same action can be viewed either as uncompleted, 'seek, pursue', or as completed: 'get, accomplish'. The situation is commonplace: cf. OIr. *siacht* 'made for' / *ro-siacht* 'reached', or Russ. *rešat' zadaču* 'work on a problem' / *rešit' zadaču* 'solve a problem'. The meaning 'strikes' given in the *RIA Contribb.* s.v. 2 *seinnid* represents simply a specialized application, conditioned by the context: *co sebaínd a fólt de* 'so that he struck his hair from him' (LU 5678) and similar examples, all from the Táin. This particular application, always with preposition *de* or *ass*, is paralleled in Hittite, where *šanh-* 'seek' also has the specialized meaning 'cleanse, wipe', particularly with the preverb *arha* 'off'. Such divergent semantic specializations are common with verbs of this sort; the cognate *ἀνίω* in colloquial Attic Greek (Aristophanes *passim*) means 'hurry up'. The basic meaning in Old Irish of the simplex *sennid* appears in the series of examples labelled 'obscure' in the *RIA Contribb.*, where a value 'get (something, somewhere)' as in Gk. *ἀνίω* is indicated: *rodóm-sibsea sech riaga* 'he will get me past torments' RC 20.414 (Amra Choluim Chille); *sennait roit ruadressa* 'they go a road of fierce battles'. The latter example, with 'road' as 'inner' object, is exactly paralleled by uses of the cognate *ἀνίω* with *κέλευθος* 'way, road' in Greek; πολλὴν κέλευθον ἤνυσεν, Aesch. Pers. 748.

⁸ See *RIA Dict.* s.v. *fo-teinn*.

gwares 'succurrat' < **wo-ret-s-*; *gwnech* 'faciat' < **wreg-s-*.⁹ To these may be added the Brittonic stem **tex-* 'flee' < **tek-s-* in OW *rydecho*, Bret. *tec'het*. These agree exactly in formation (root + *-s-*) and distribution (root in *-T'*) with the Old Irish *s*-subjunctive, and suffice to attribute this formal category to Common Celtic. But already in Early Welsh these forms are only fossilized remnants. For the formation of the productive subjunctive type in the Brittonic languages, which is an innovation, see chapter twelve below.

The divergences within this group of forms as a whole in the matter of the vocalism of the subjunctive stem can be explained by the interplay of analogical pressures. The original structure is that mirrored in the *TET-* roots with *e*-vocalism; *sed-s-*, with normal *e*-grade in the root, not lengthened grade. But the normal *e*-grade of an *i*-diphthong root was IE *-ei-*, which had been monophthongized to *-ē-* already in the Common Celtic period. Hence the type *reig-s-* yielded *rēg-s-*, *rēss-*, with the sigmatic formation characterized in appearance by suffixed *-s-* plus the accessory mark of a long vowel: an apophonic formation opposing present *-i-/subjunctive -ē-*. The same *-ē-* appeared at a later date, in the subjunctives from roots in final cluster of nasal plus stop, or in final *-nn*. This is a regular phonetic treatment: **keng-s-* > *kēss-* (*cingid* 'goes'), **swenn-s-* > **swēss-* (*sennid* 'plays'). This resulted in some more instances of an apophonic contrast present *i*/subjunctive *ē*, some (the roots in *-nn*) of present *e*/subjunctive *ē*, and one of present *i*/subjunctive *ī*: *īss-* to *-icc* 'comes' < **ixs-* < **ink-s-* (cf. *richtu* < **rixt-* **r-ink-t-*, *OIGr.* 128). The chronologically later development of Common Celtic *eu* > *ou* > *ō*, completed well after the separation of Goidelic and Brittonic, probably after the beginning of the Christian era, created a parallel apophonic situation *-u-/ō-*. The effect of this was to create an analogical pressure towards long vowel *s*-formations; as a result, the *TET-* formations

⁹ Lewis-Pedersen 287. The initial of *gwnech* (1 sg. pres. ind. *gwnaf*) has been dissimilated from *gwr-*, still attested in OW *gwragan* 'let us make'.

with root vowel *-a-*, originally outside the apophonic situation even in those Indo-European dialects with long vowel sigmatic aorists, lengthened that *-a-* in the sigmatic form : *sag-s* → *sāg-s-*, to conform to the apparent structure *-s-* plus accessory vowel lengthening, thus filling in the pattern of sigmatic forms : *Tēss-*, *Tōss-*, *Tāss-*. This, in turn, opened the possibility *u* → *ū* (*lūss-* : *loimm* 'draught' with original short *u*), an occasional formation. But this development was never extended to the group of roots in *e*-vowel and final stop, *TeT-*, which preserved their characteristic Indo-European shape. The sigmatic aorist was inherited from Indo-European with a short vowel : the development of all the other long vowels appearing in the Old Irish *s*-subjunctive is later, and probably completed only quite late in Proto-Goidelic.

As regards the distribution of the suffix *-s-*, its appearance with roots in final dental or velar is clear. The roots in *-nn* constitute only an apparent exception to this. For in these cases *-nn-* results from an assimilation of an earlier *-ndn-*. Typical for the formation is *-glenn-* : OCS *ględaję ględati* 'look'. The original form of the Irish verb is **glend-ne/o-*, with suffixation of a present forming *-ne/o-*. Historically this is merely a repetition of the *-n-* of **glend-*, originally a nasal infix present. The type is that common in Greek (e.g., *λιμπάνω* 'I leave') and Armenian (e.g., *lk'anem* 'I leave') and occurs in Slavic as well : OCS *po-gręznęti* 'sink', with *-n-* both in the suffix (*-nę-*) and the root (where it nasalizes the vowel). We have in fact an independent creation of the identical form **glend-n-* underlying OIr. *-gleinn* in the Polish (dial.) *ględnać* 'look'.¹⁰ In Celtic as in Slavic, the nasal suffix *-ne/o-* was originally confined to the present : cf. the verbal noun *foglaimm* to *fo-gleinn* 'learns'. A subjunctive such as *glēss-* could to back originally to a **glend-s-*. But the assimilation of *-ndn-* > *-nn-* created a morphemically indivisible cluster already in

¹⁰ Berneker, Slav. etym. Wb. s.v. *ględaję* ; J. Karłowicz, *Słownik gwar polskich* s.v. *ględnać*.

Common Celtic, and the present stem final *-nn* was substituted for the earlier root final *-nd*:¹¹ perfect (> preterite) *geglann*. The result was that from the synchronic point of view, subj. *glëss-* was derived from **glenn-s-*. The two verbs *senn-*, where *-nn-* is not from **-ndn-*,¹² show the same treatment, **swenn-s-* > *sëss-*.

In terms of distribution, the solitary *s*-subjunctive from a root in original final *-s* is instructive. For in a repartition between roots in final stop, (which form an *a*-subjunctive) and roots in final resonant (which form an *s*-subjunctive), root-final *-s* is the only point where there can be a distributional hesitation. That there was such a hesitation is mirrored in the contrast between two Old Irish forms: *gōss-* < **geus-s-* (*do-goa* 'choose': *γεύομαι* and cf. Hom. sigmatic aorist *ἐγευσάμην*) beside subj. *-fia* < **wes-ā-* (*fōaid* 'sleeps, spends the night').

The comparative evidence from Italic points definitely to the conclusion that the *-ā-* of the optative which became the subjunctive of Italic and Irish was equally at home in a variety of root forms: *TET-* (Lat. *legat*, *gerat* < **gesā-*) as well as *TER-* (Lat. *ferat*, OIr. *beraid*). The *-ā-* was originally independent of the present stem, as proved by comparison of the normal situation of Old Irish with the vestigial conservation of certain archaic forms in Latin: *tagam* (*TET-*): *tangō*, *aduenat* (*TER-*): *adueniō*.

The significant point is that on comparative grounds there is no evidence to justify the assumption that there is anything ancient about the distribution of the *a*-subjunctive in Irish, appearing with all roots except those in root-final dental or velar (which form an *s*-subjunctive). We have seen that roots in *-s* (which is lost in medial position at the time of lenition) could form both *-s-* and *-ā-* subjunctives; one may note further that *aigid* 'drives' and *ad-gládathar*

¹¹ Naturally before the general assimilation of *-nd-* > *-nn-* which is an early Middle Irish phenomenon.

¹² Since both are originally *seṭ* roots, **swenH-* **senH-*, the original present formation was in all likelihood that of a *-na-* verb: **swn-na-* > **swenna-*. The hypostasis to the thematic type, which underlies the Old Irish forms, is due to the influence of the **-ndn-* class, with which they were identified.

'addresses' likewise form an *a*-subjunctive, not an *s*-subjunctive, despite the final stop (spirants in Old Irish). In the case of *aigid* < IE **ag-*, the reason for this is in all likelihood that Common Celtic inherited no aorist at all for this verb. The form **ag-e/o-* in Indo-European seems to have been confined to the present system, and there is no good evidence that the root ever formed either an aorist or a perfect in Indo-European times. Sanskrit *ajati* occurs only as a present; Latin *ēgi* is an Italic innovation, with apophonic *a* : *ē* on the model of *fac-* : *fēc-*, *iac-* : *iēc-*; ¹³ Greek *ἤγαγον* with Attic reduplication is a purely Greek innovation; OIcel. *ók* preterite of *aka* is completely regular and capable of formation at any point in Germanic, hence has no independent value; and finally, the OIr. pret. *-acht*, *W aeth* is, as we shall see in chapter § 13, a Celtic innovation. The only evidence for a perfect in any Indo-European language is the isolated Homeric noun *ἄγυια* 'street', which appears to be a substantivised feminine participle.¹⁴ The verb *aigid* forms a suppletive future *-ebla* in Old Irish, and it is likely that the perfect and aorist in Common Celtic were formed suppletively as well. At any rate there never appears to have been a Celtic form **ag-s-*. Such an explanation as we have suggested for the retention of the *a*-form *ag-ā-* might in theory be valid for *ad-gládathar* as well; unfortunately the dearth of clear cognates prohibits the demonstration of this. But what is significant is that these two roots, *ag-* and *glád-*, had as part of their inheritance the form in *-ā-*: OIr. *ag-ā-* = Lat. *ag-ā-*.

We must assume on the contrary that the *a*-subjunctive (or optative) originally was formed by all roots, whether of the structure *TET-*, *TERT-*, or *TER-*, and that it was displaced from the roots of the structure *TET-* or *TERT-*, by the encroachment of the original *s*-aorist in this formal class; this *s*-aorist itself had been displaced from its original functional position as aorist by the encroachment of the original perfect upon it.

¹³ Benveniste, *Arch. Ling.* 1.18 (1949).

¹⁴ Cf. F. Specht, *KZ* 64.62 (1937), but with dubious semantic and functional analysis.

We are fully justified in speaking of the locus of the *s*-subjunctive in the general terms of *TET*- and *TERT*-roots, and not in terms of the more narrow distribution descriptively stateable from Old Irish. This included *TET*-roots in final dental or velar; we have seen that roots in *-s* could likewise take *-s*; *gōss-* < **geus-s-*. The only remaining phonemes that a *TET*-root can end in in Proto-Goidelic or Common Celtic are a labial or a labiovelar. The Old Irish voiceless velar continues both the earlier velar and the labiovelar; the two coalesced, *k^w* > *k*. Certain of the Irish verbal roots contain Common Celtic final *-k^w*, such as *-sech* beside Gk. *ἐννεπεν* < **en-sek^we*, W *heb* 'inquit', but no sigmatic forms are attested for the simple verb. The distinction *k^w/k* was in any case neutralized before *-s*-, and both appeared as [-xs-]/[-ks-].

More striking, however, are the possible *TET*-roots ending in a labial. There are of course no Goidelic verbs in *-p*, since Indo-European *p* was lost very early in Common Celtic, and *p* from *k^w* is a Brittonic phenomenon. Goidelic had no *p* in its consonantal system between the time of the loss of IE *p*, and the introduction of the second group of Latin loanwords, shortly before the Irish language enters the period of recorded history. The roots in Goidelic *-b* (from IE *bh* or *b*) were extremely rare: there are only two in Old Irish, *gaibid* 'takes' (*gab-*) and *ibid* 'drinks' (*ib-*). The normal Celtic morphophonemic transformation

$$-b + s > -ps- \rightarrow -ks- [-xs-]$$

must have produced a thoroughly anomalous situation:

present <i>gab-</i>	aorist <i>gaxs-</i>
<i>ib-</i>	<i>ixs-</i>

In view of its typological rarity this was inherently unstable, and liable to analogical transformation. In the case of these two verbs the shift from aorist did not take place, and the old optative in *-ā-* (to *TET*-roots!) was retained in the subjunctive modal function, instead of being ousted from the system: OIr. *-gaba*. *-eba*.¹⁵ These are inherited

¹⁵ More commonly the subjunctive of *ibid* is the suppletive *lūss-*.

forms, on the parallel evidence of Osc *kahad*, Lat. *bibat*. The sigmatic aorist forms remained in the preterital function, but in renewed form; **gaxs-*, **ixs-* were replaced by **gab-ass-*, **ib-ess-*, with the new, productive preterite morph whose origin we shall discuss in the chapter devoted to the *s*-preterite. This essentially nonce substitution of *-ass-/ess-* for *-s-*, with the selection of the two doubtless conditioned by vowel harmony, had the advantage of preserving the identity of the root form, and thus achieving a linguistically stable situation: present *gab-yo/i-*, *ib-e/o-* preterite *gab-ass-*, *ib-ess-*.

The examination of these few roots in final labial, together with the roots in original final *-s* such as **geus-*, **wes-*, shows that the process *s*-aorist → *s*-subjunctive was originally proper to essentially all roots of the structure *TET-*, *TRET-*, or *TERT-*. Originally all of these roots formed an *ā*-optative (later *ā*-subjunctive); where the original *s*-aorist assumed the subjunctive function, the form in *-ā-* simply disappeared from the system.

The only case of hesitation was those roots—limited in number—ending in *-s*, where both the *-s*-subjunctive and the *-ā*-subjunctive are found. The tendency to use of the *-ā-* subjunctive in these cases is probably not very old in Irish, and in all likelihood conditioned by the loss of intervocalic *-s-*. For this resulted in the creation in the present of a hiatus root, Thurneysen's class A III: cf. **wos-eti* > disyllabic *fōaid*. Now this class of hiatus verbs, sufficiently unified in Old Irish to warrant their being treated as a single group, is of diverse origin. The hiatus in most cases results from the phonological loss of a consonant in intervocalic position before the verbal desinences (which all begin with a vowel). This lost consonant may have been either the final consonant of the root, or the initial consonant of a present forming suffix. The consonants subject to loss are IE *-p-*, *-s-*, *-y-*, *-w-*. The loss of *-p-* is a much earlier development, Common Celtic in date, and there are actually no hiatus verbs attested in Old Irish which appear to go back to an Indo-European root in final *-p*: indirect evidence

for their original existence is the adjective *tee té* 'hot', n. pl. disyllabic *teît*, from a participle **te[p]ent-* = Skt. *tapant-* 'hot', to the verbal root of Skt. *tapati*, Lat. *tepeō*. The great majority of hiatus verbs in Old Irish result from the loss of intervocalic *-s-*, *-w-*, and *-y-*. Of these three the loss of *y* is found both in intervocalic and in absolute initial position, and its loss is probably much earlier than that of the other two, as Thurneysen has suggested (*OIGr.* 121-2); the situation is quite analogous to the treatment of **w* and **y* in Greek. Intervocalic *-s-* and *-w-* were lost at a much later date, and were preserved in initial position. Now the number of hiatus verbs from roots in original *-s* is small compared to the number with original *-w* or *-y*: the predominance is of the order of 4 or 5 to 1. The roots in *-s* are of the structure *TET-*, hence we expect the formation of an *s*-subjunctive *TET-s-*; but roots in *-w* or *-y* are of the structure *TER-*, and for these the *s*-subjunctive is not expected, but rather the conservation of the *ā*-subjunctive *TER-ā-*, as we have seen above. Before the loss of *-s-* and *-w-*, the situation was stable:

present <i>TEs-e/o-</i>	subjunctive <i>TEs-s-</i>
present <i>TEw-e/o-</i>	subjunctive <i>TEw-ā-</i>

The subjunctive was structurally determined by the present, in Kuryłowicz's sense. But after the loss of intervocalic *-s-*, *-w-*, this relation became a source of ambiguity, since the presents *TEs-e/o-* and *TEw-e/o-* had coalesced into the hiatus type *TE-e/o-*. Phonological loss of *-w-* yielded in the subjunctive *TE-ā-*, whereas in *TEs-s-* the geminate *s* was simplified and preserved as a new phoneme */s/*. Hence the new situation appeared in structural terms as follows:

present <i>TE-e/o-</i>	{ subjunctive <i>TE-ā-</i>
	{ subjunctive <i>TE-s-</i>

The type *TE-ā-* was statistically prevalent in the hiatus verbs, as well as structurally more in accord with the hiatus type; the *ā*-subjunctive was furthermore the productive subjunctive formation in Old Irish, that employed with the weak *a-* and *i-* verbs. The forms *TE-s-* in hiatus verbs,

on the other hand, were rare and residual, for in the normal situation of Old Irish a subjunctive *TE-s-* presupposed a present *TET-*, not *TE-*. Hence it is predictable that the *TE-s-* subjunctive of hiatus verbs would tend to be forced out of existence, and replaced by the productive *ā*-subjunctive. We have seen that *gōss-* to *-goa* 'chooses' is the only such form continuing in Old Irish.

In general the *s*-subjunctive simply gradually disappeared, and the verb formed a productive *ā*-subjunctive. Compare *ad-cí* 'sees' (active), with deponent *a*-subjunctive 1 sg. *ad-cear*, 3 sg. *-accadar*. In the case of this verb we have two indications of the previous presence of an *s*-subjunctive. The first is the subjunctive passive form *-accastar*, where the occasional indicative use in the older language (twice in Würzburg, cf. *OIGr.* 386) would indicate that it was already on the way toward being ousted from the subjunctive system. The second and conclusive indication is the preservation of the hapax active 2 sg. subjunctive form *for-aicis* (from *for-ad-cí*) in the very archaic law text *din Techtugud*, *AL* 4.18, 21. This form is a venerable archaism both because of the conservation of the *s*-subjunctive form, and because of the preservation of active inflexion; in itself it constitutes additional evidence for the great antiquity of this legal text which its heptasyllabic verse would suggest.

We have examined the history of the Old Irish *s*-subjunctive as a category; its origin in the Common Celtic *s*-aorist, and its subsequent ousting from the aspectotemporal plane toward a modal acceptance, in the case of roots of the structure *TET-*. There remains to be considered the question of the constitution of the paradigm itself, the formation of the desinences.

The Indo-European sigmatic aorist was athematic; the desinences were added directly to the morpheme *-s-*. The original paradigm was in late Indo-European, with secondary endings alone: sg. *-s-m*, *-s-s*, *-s-t*, pl. *-s-me*, *-s-te*, *-s-nt* (*-s-e/ont*). The exact form of each ending is not important; only the fact that they were athematic.

Two forms speak for the fact that Celtic inherited an athematic paradigm from Indo-European. The first is the 3 sg. of the *s*-subjunctive, which in Old Irish must be reconstructed to a proximate athematic form: 3 sg. abs. *téis* < **(s)teigh-s-ti*, 3 sg. cjt. *-té* < **(s)teigh-s-t*, or 3 sg. abs. *reis* < **ret-s-ti*, 3 sg. cjt. *-ré* < **ret-s-t*.

There is an additional testimony of the athematic character of the *s*-aorist/subjunctive. The forms have independent value, being in the Old Irish period divorced from the paradigm of the *s*-subjunctive. They are the six originally 2 sg. *s*-subjunctive forms which function as 2 sg. present imperatives: (*OIGr.* 375) *at-ré* 'arise!' < **reg-s-s*; *no-m-ain* 'spare me!' < **aneg-s-s*; *aicc* 'invoke!' < **ad-ged-s-s*; *tog* 'choose!' < **to-gōs-s-s*; *tair* 'come!' < **to-are-ink-s-s*; **foir* 'help!' (MS *-fóir*) < **wo-ret-s-s*. These forms can only be explained as containing athematic 2 sg. *-s*. And since they function as imperatives we may assume that they were taken over after the transition from aorist to subjunctive, in other words, that they are by origin 'jussives'.

The original athematic paradigm of the *s*-aorist was preserved only in the 3 sg.; elsewhere in the paradigm the athematic endings were replaced by the corresponding thematic endings. We have seen in chapters § 1 and § 10 that the Indo-European opposition of primary/secondary endings was utilized in Celtic solely on the basis of a mechanical repartition between non-compounded (absolute) and compounded (conjunct) forms of the same verb. The desinences themselves had no function as temporal markers, and it was only late in Celtic prehistory, after the separation of Brittonic and Goidelic, that a set of 'secondary' endings with a temporal ('remotive') function was developed. The 3 sg. *s*-aorist has absolute/conjunct *-s-ti/-s-t* just as the 3 sg. present has thematic *-eti/-et*. The sole difference is that the present, with its thematic vowel, has innovated vis-à-vis the athematic *s*-aorist. Where the aorist was not formed with *-s-*, as in the form *ro-lá* discussed in the preceding section, the endings of present and aorist were

identical, **lā-ti/-lā-t*, which doubtless facilitated the utilization of this form, etymologically an aorist, as a perfective present: *ní-ro-láim*, *OIGr.* 470, and cf. also the presents *con-la*, *in-la*. It is then hardly surprising that we should find the same identity in the other persons of the subjunctive paradigm, from an *s*-aorist, with the other persons of the present indicative. We may compare the paradigms of the conjunct of the present of *berid* and the subjunctive of *guidid*: (*OIGr.* 360, 390)

sg. 1	-biur	-gess (-lius with <i>u</i> -colour marked)
2	-bir	-geiss
3	-beir	-gé
pl. 1	-beram	-gessam
2	-berid	-gessid
3	-berat	-gessat.

The paradigms are identical, save for the athematic/thematic difference in the 3 sg. We may reconstruct them in Common Celtic as follows:

<i>ber-ū</i>	<i>ged-s-ū</i>
<i>ber-ī</i> ¹⁶	<i>ged-s-ī</i>
<i>ber-et</i>	<i>ged-s-t</i>
<i>ber-omo</i>	<i>ged-s-omo</i>
<i>ber-ete</i>	<i>ged-s-ete</i>
<i>ber-ont</i>	<i>ged-s-ont.</i>

The mark of the aorist (and later subjunctive) is the *-s-*; the desinences themselves in Common Celtic did not contribute to this distinction. Hence given the situation of identity of *-ti/-t* in the 3 sg. of both tenses (present and aorist) there was no functional reason to stand in the way of the replacement of the athematic endings of the *s*-aorist outside the 3 sg. by the thematic endings of the present. For the reason why this did not take place in the 3 sg. of the aorist, see further below.

The parallelism is even closer when we consider that in the present itself, there existed a number of athematic

¹⁶ The 2 sg. *-ī* goes back to **-ei*, and is cognate with Gk. *-ei(s)*, Lith. *-i*, refl. *-ie-s*.

formations inherited from Indo-European, which were renewed by the same process of thematization within the Common Celtic period. The thematization of the *s*-aorist outside the 3 sg. was in all likelihood contemporaneous with, and simply one aspect of the general process of thematization in the verbal system as a whole, the replacement and renewal of older athematic forms by newer thematic forms. In a linguistic system where the tenses and aspects were marked formally either by root apophony or suffixation or both, it is hardly surprising that the renewed form of the desinences would be the same in the several categories.

We may examine the evidence for these formerly existing Common Celtic athematic presents. Old Irish, like many other Indo-European languages, preserves athematic flexion only in the verb 'to be' in historical times. But there is good evidence that athematic presents did exist in Celtic in earlier times—which in general we should expect. Eric P. Hamp, in his study of 'OIr. *gaib*-, Welsh *gafael*, *caffael*, *cael*, *cahel*' (ZCP 24.229-33 [1954]), has made it very likely that the proliferation of forms in Welsh results from a crossing of three separate athematically conjugated roots in Common Celtic, **gab-* (OIr. *gaibid*, *gab-yo/i-*), **kap-* (Lat. *capiō*), and **kag-* (Osc. *kahad*).

We have also a more interesting series, showing a certain paradigmatic unity of shared morphological features, which warrant their being treated as a group, and justify the hypothesis of unitary typological origin. There are six of these verbs: *fichid* 'fights', *nigid* 'washes', *ligid* 'licks', *snigid* 'drips', *mligid* 'milks', and *dligid* 'is entitled to'. They share the interesting formal characteristic of being presents formed on the zero grade of the Indo-European root, with thematic conjugation, as follows (respectively): **wik-e/o-* (**weik-*), **nig-e/o-* (**neig-*), **lig-e/o-* (**leigh-*), **snig-e/o-* (**sneigwh-*), **mlg-e/o-* (**melg-*), **dlg-e/o-* (**delgh-*).

Meillet, with his characteristic acuity, was the first to note that the zero grade vocalism of some of these forms is likely to reflect an original athematic present. He treated the Celtic forms *mligid* and *nigid* in two articles of the same

year: 'Les formes verbales de l'indo-européen **mely-* "traire"' (*MSL* 17.60-4 [1911]), and 'De quelques formations de présents en indo-européen' (*MSL* 17.193-7 [1911]), where he demonstrates that both continue Indo-European athematic presents. His suggestion is strengthened by the rule we can formulate about the treatment in Celtic of paradigmatic apophony, of which the athematic present is in Indo-European the example par excellence: that Celtic universally generalized the zero-grade. There are no exceptions to this anywhere in the Celtic verbal system; the apparent reflexion of the Indo-European *o*-grade (proper only to the singular!) commonly assumed in the reduplicated perfect of the type *cingid*: *cechaing* is, as I shall demonstrate in a subsequent study, illusory. For two other verbs in our list original athematic conjugation in the present is historically attested: cf. Vedic *redhi* 'licks' beside OIr. *ligid*, and OLith. *sniegti* 'it is snowing' beside OIr. *snigid*. The comparative evidence, in conjunction with the principle of the Celtic generalization of the zero grade in paradigmatic apophony, entitles us to assume that in an original athematic paradigm as follows:

<i>weik-mi</i>	<i>wik-mo</i>
<i>weik-si</i>	<i>wik-te</i>
<i>weik-ti</i>	<i>wik-onti</i>

the zero grade **wik-* was generalized throughout the paradigm. Subsequently the paradigm was renewed by the replacement of athematic endings by thematic endings, yielding thus the immediate prototype of OIr. *fichid* (< **wik-eti* ← earlier **wik-ti*). We may juxtapose then the 3 sg. athematic present and *s*-aorist of this same root: **wik-t(i)*: **weik-s-t(i)*, to demonstrate the historical identity in the desinences. When the thematic endings were substituted for athematic endings in the present, the formal determination of the aorist by the present resulted in the adoption of these same thematic endings in the *s*-aorist in the first and second persons singular and plural: *-ū, -ī, -omo, -ete*. The 3 pl. *-ont* was possibly identical in both

thematic and athematic inflexion ; there is no Celtic evidence for *-ent*. That the 3 sg. of the aorist > subjunctive retained its athematic character is due to the morphological consequences of an essentially accidental phonological transformation.

One of the characteristics of the Common Celtic system of consonantal phonemes was the opposition of two sibilants, *s* : *ss*. The latter was evidently a long consonant, realized probably as a unit phoneme [ts], though the realization probably differed dialectically at different times. It was of diverse origin, sometimes resulting from earlier **-ns(-)*, but usually from Indo-European **-s-s-*, **-t-t-*, **-t-s-*, **-st-*, or *-s-t(-)*, i.e., both across and within morpheme boundary. Consequently the 3 sg. ending *-t(i)* of the athematic *s*-aorist would have been fused with the *-s-* itself, yielding undecomposable *-ss(i)*, both after root in final consonant, and after root in final vowel, as in the later *s*-preterite : OIr. *-car* 'loved' < **karass* < **kara-s-t*. The original athematic desinence *-t(i)* had lost its phonological identity, and thus escaped the process of thematization, which led to the replacement of, e.g., **wik-ti* by **wik-eti* (OIr. *fichid*).

It is this phenomenon which also accounts for the 'irregularity' noted by Thurneysen (*OIGr.* 391), that while a cluster **-tst(-)* yields regularly OIr. *-ss*, from a cluster **-kst(-)* (as in **tek-s-t*, OIr. *-té* 'fugiat') one might expect *-cht*, on the evidence of *echtar* 'outside of' < **exs-tero-*, *úachtar* 'the upper part' < **ouxs-tero-*, cf. the prepositions *ess-*, *úas*. But in these cases the *-ks* > *-xs-* was always within a single morpheme (IE **eks*), whereas in verb forms such as **tek-s-* the morpheme division was crucial, since the *-s-* carried the entire functional load of opposing the aorist to the present : e.g., 1 sg. pres. **tek-ū/aor*, **tek-s-ū*. Hence the treatment for roots in final velar was assimilated to that of roots in final dental, which preserved the identity of both root and suffix morpheme. This is a good example of the principle on which Kuryłowicz has rightly insisted in his *Apophonie*, that the functional position in a particular morphological structure of a given phoneme or

group of phonemes can have profound influence on its phonological development, and that we must frequently distinguish between 'morphological' reflexes and purely 'phonetic' reflexes of phonemes. In this case the 'phonetic' reflex of *-kst-* is *-cht-*, but the 'morphological' reflex is *-ss-*.

We may present here paradigms of the aorists in Common Celtic of a root in final dental and a root in final velar, first in morphophonemic and then in phonemic transcription:

(rethid 'runs')		(techid 'flees')	
<i>ret-s-ū</i>	<i>ret-s-omo</i>	<i>tek-s-ū</i>	<i>tek-s-omo</i>
<i>ret-s-ī</i>	<i>ret-s-ete</i>	<i>tek-s-ī</i>	<i>tek-s-ete</i>
<i>ret-s-t</i>	<i>ret-s-ont</i>	<i>tek-s-t</i>	<i>tek-s-ont</i>
phonemically (with <i>-ks-</i> = [-xs-])			
<i>ressū</i>	<i>ressomo</i>	<i>teksū</i>	<i>teksomo</i>
<i>ressī</i>	<i>ressete</i>	<i>teksī</i>	<i>teksete</i>
<i>ress</i>	<i>ressont</i>	<i>teks</i>	<i>teksont.</i>

The 3 sg. *teks* represents *tekss* < *tekst*; there is no indication that *ks* could contrast with *kss*, hence I assume a neutralization of the opposition *ss* : *s* after *k*, and the appearance of the simpler *s*.

This process of assimilation of *-st* to *-ss* has a very significant result for the organization of the desinential system; the creation of a zero ending in the 3 sg. conjunct. Beside, e.g., *ress-ū*, *teks-ū*, *ress-ī*, *teks-ī*, the 3 sg. *ress*, *teks*, historically containing a 3 sg. desinence, were reinterpreted as *ress-ø*, *teks-ø*. We have seen that the utilization of a zero ending for the 3 sg. is characteristic of a variety of languages, both Indo-European and non-Indo-European; this development in Celtic, the constitution of a zero from an earlier desinence with phonetic body, must be viewed as the result of a general linguistic tendency, not confined to Celtic alone. But the means and process of effecting this transformation were properly Celtic.

Within the group of roots of the structure *TET-*, this situation remained stable; our restored forms are the immediate prototype of the *s*-subjunctive forms attested

in Old Irish, continuing the sigmatic aorist suffixed to *TET*- roots. In the succeeding chapters, on the *t*-preterite and the *s*-preterite, we shall see how this development of a zero ending in the 3 sg. was the principal cause of the formal development of these two categories.

The only changes from Common Celtic to Primitive Irish (the immediate forerunner of Old Irish), were first that intervocalic *-s-* > zero and *-ss-* > simple */s/*, and second, that *-ks-* [*-xs-*] fell together with *-ss-* and shared its development to simple *-s-*. The stem of the *s*-subjunctive of all verbs now had the structure *TEs-* (3 sg. abs. *TEs'-ø*), beside present stem of the structure *TET-*; in the vocabulary of 'process', abstracting the accessory mark of vocalic length in certain cases which we have seen, the formation of the *s*-subjunctive could be expressed as 'replace stem-final T (= any spirant, stop, or /N/) by /s/'.

§ 12. THE BRITTONIC SUBJUNCTIVE.

As we have seen in the preceding chapter, the Common Celtic *s*-subjunctive is preserved in Brittonic only in the three Middle Welsh forms *duch*, *gwares*, *gwnech*. These forms are identical in origin and structure with Old Irish *s*-subjunctives, save that they have generalized the absolute ending: **deuk-s-ti*, **ret-s-ti*, **wreg-s-ti*. The view that they contain thematic conjunct endings **deuk-s-et*, etc. (Lewis-Pedersen 288), which could explain these forms phonetically, is shown to be wrong on morphological grounds by the Brittonic form of the *s*-preterite 3 sg.: MW *-as* (*-es*, *-is*) can only be derived from an athematic absolute ending *-(a)s-ti*. Given the existence of MW *caras* (**kar-as-ti*), the exact parallelism OIr. *carais/car* (**kar-as-ti/*kar-as-t*) = *reiss/ré* (**ret-s-ti/*ret-s-t*), necessitates the analysis of MW *gwares* as **wo-ret-s-ti*.

The normal formation of the subjunctive in the Brittonic languages is entirely different. I give below typical paradigms

in the three Brittonic languages of MW *caraf* 'I love', Co. Bret. *gallaf* 'I can', after Strachan (*Introd. to Early Welsh* 82) and Lewis-Pedersen (*CCG* 286):

	MW	Co.	Bret.
sg. 1	<i>car(h)oef</i> <i>car(h)wyf</i>	<i>gyllyf</i>	<i>guillif</i>
2	<i>cer(h)ych</i>	<i>gylly</i>	<i>guilly</i>
3	<i>car(h)oe</i> <i>car(h)wy</i> <i>car(h)o</i>	<i>gallo</i>	<i>gallo</i>
pl. 1	<i>car(h)om</i>	<i>gyllyn</i>	<i>guelhomp</i>
2	<i>car(h)och</i>	<i>gallough</i>	<i>guelhet</i>
3	<i>car(h)oent</i> <i>car(h)wynt</i> <i>car(h)ont</i>	<i>gallons</i>	<i>galhint</i> (<i>deceffont</i>)

Beside these forms we may set the Middle Welsh subjunctive of *bot* 'be' (Strachan 99, Lewis-Pedersen 326):

sh. 1	<i>bwyf, bof</i>	pl. 1	<i>bwym, bom</i>
2	<i>bych</i>	2	<i>boch</i>
3	<i>bo, OW boi, boit</i>	3	<i>bwynt, boent, bont.</i>

Middle Welsh also shows compound forms, built on the present stem *byd-*: 1 sg. *bydwyf*, 3 sg. *bytho*, 3 pl. *bydont*, etc. Cornish shows *bo*, *bons* in the third person, agreeing with the Welsh uncompounded forms; Breton has *bezo*, *bezint*, corresponding to the Welsh compounded forms *bytho*, *bydont*.¹ The basic form is the shorter *bo-*, as proved by comparison with Goedellic (v. infra).

The similarities among the three Brittonic languages are such that it is clear we have to deal with a Common Brittonic origin; what divergencies do appear can be explained by phonological transformations proper to each language. Thus the characteristic *-h-* disappears regularly in Cornish, but its previous existence is proved by the occasional occurrence of provection, e.g., 2 sg. *lyttry* from

¹ E. P. Hamp, 'Morphological correspondences in Cornish and Breton', *JCS* 2.11 (1953).

laddra 'steal'.² The basic sign of the subjunctive, common to all three languages, is *-ho-*. It is this formative element which must serve as the point of departure of any historical explanation.

The efforts of Pedersen, *VKG* 2.356, 1.51, to explain MW 1 sg. *car(h)wyf* as a refashioning of IE **karēmi* must be rejected for the simple reason that no such form ever existed in Indo-European; the subjunctive in **-ē-* had a 1 sg. *-ō-*, cf. Gk. *παιδεύς*, *παιδεύω*, Ved. *bhavās(i)*, *bhavā(-ni)* or the Latin future *ferēs* but *feram*.³ In any case, the phonological result in Welsh of **karēmi* would not have been *carwyf*, since IE **-ē-* in all positions (including final syllables) fell together with **i* in Proto-Brittonic.⁴ The Brittonic subjunctive cannot be explained as a reflection of the Indo-European subjunctive in *-ē-*.

Vendryes⁵ was the first to recognize that the *-h-* of the Brittonic subjunctive must reflect IE *-s-*, and that the formation must thus be connected with the sigmatic aorist. But he did not express an opinion on the phonetic detail necessarily involved. A vocalic element clearly followed the *-s-*, appearing as *-o-* in the attested forms; Strachan pointed out (*Introd.* 69) that a vocalic element also must have preceded the *-s-*, and was subsequently syncopated out of existence.

The mark *-h- < *-s-* in fact is evidence for the complex phonetic character of the Brittonic subjunctive as we know it. For the reflex *-h-* in this position implies the previous existence of 'juncture' phenomena before the *-s- > -h-*. The treatment is that proper to the initial consonant of the second member of a compound. Intervocalic *-s-* in morphologically unconditioned position would simply disappear.⁶

² Lewis-Pedersen 286.

³ Cf. Benveniste, *BSL* 47.14 (1951).

⁴ Jackson, *LHEB* 304 n. 1. The same is true of Goidelic, as proved by *-creti < *kreddē-t*. This change is in fact likely to be early Common Celtic in date.

⁵ 'Sur l'imparfait du subjonctif en moyen-gallois', *MSL* 11.258-67 (1900).

⁶ Jackson, *LHEB* 521 ff.

We have in Brittonic other cases illustrating the same morphophonemic treatment, where a derivational suffix is treated as though it were the second member of a compound. In all of these we have a suffix of complex form.

The first is the superlative : OW *-ham*, MW *-haf* < **-isamo-*. This suffix is Common Celtic, recurring in OIr. *-em* and Gaul. *-isamo-*, but in this form it is not older : Latin **-samo-* (*pigerrimus* < **pigro-samo-*) and **-is-samo-* (*-issimus*) are similar to, but not identical with, the Celtic type. The second is the equative : MW *-het*. This form is obscure in origin, but is clearly a Brittonic innovation. The entire system of the comparison of the adjective in the several Celtic languages results from a number of independent innovations, as is shown also by the productive Welsh comparative suffix *-ach* as opposed to OIr. *-u* ; the same conclusion is afforded by the syntactic and inflectional peculiarities of the forms of comparison, e.g., the obligatory nominative construction and the absence of inflection in Old Irish (*OIGr.* 232). The appearance of juncture phenomena before the equative and superlative suffixes in Brittonic must be the reflection of such a system in transition.

The same phonological treatment recurs in the Brittonic denominative suffix *-ha(g)-* < **-sag-* : OW *scamnhegint* 'leuant', OBret. *lemhaam* 'acuo'. The Brittonic form of the suffix is **-+sag-*, with preceding juncture. By comparison, the Old Irish denominative suffix *-aig(idir)* shows no trace of 'protection' of a preceding consonant, and can be reconstructed as **-sag-* without juncture.

That the Celtic languages independently developed morphological juncture phenomena at morpheme boundary in the verb, at a relatively late date, is proved by the irregular lenition treatment in Old Irish after the reduplicating syllable in the reduplicated preterite and future. A form such as fut. *-selas* from *slaidid* 'strikes' or pret. *cechlad-* from *claidid* 'digs', cannot directly reflect IE **sislad-* or **keklad-*, since in Irish medial **-sl-* appears as *-ll-*, and medial *-k-* before *-l-* is lost with compensatory lengthening

of the preceding vowel.⁷ Primitive Irish evidently went through a period of partial recompounding of the reduplicating syllable in such formations; this is apparent in the contrast between OIr. *cechlad-* < **ki+kl-* with juncture, and *-cúala* < **kukl-* without juncture. The development of this new junctural treatment must be contemporary with lenition (fifth cent. A.D.); it is another aspect of the drastic restructuring of the verb in the Primitive Irish period. The development of the *ē*-future itself represents merely the generalization of the phonetic reflex of a reduplicated formation without juncture: *céla-* 'will hide' < **kikl-*, beside the reduplicated future which has generalized the juncture treatment: *-cichlus* 'will dig' < **ki+kl-*.

It is in this morphophonemic context that the Brittonic subjunctive with its medial *-h-* must be situated. In point of chronology, the genesis of the subjunctive in its characteristic shape *-ho-* is likely to be no older than the middle of the sixth century, when Jackson (*LHEB* 521) dates *s > h* in the second member of compounds. This implies that it is only just before the separation of Welsh, Cornish, and Breton (end of the sixth century, *LHEB* 5).

We have seen that the subjunctive morpheme in Brittonic must be derived from an *-s-*, both preceded and followed by a vocalic element. There remains the problem of specifying and accounting for these vocalic components. We will consider first the one which followed the *-s-*.

The existence of an *ā*-subjunctive (earlier optative) in both Old Irish and all the Italic languages, and the striking correspondences of the type *ferat* : *-bera*, *agat* : *-aga*, would lead us to expect a priori that an *ā*-subjunctive once existed in the Brittonic languages as well. There are a number of forms preserved in Early Welsh and the other Brittonic languages which show that this was indeed the case.

The 3 sg. imperfect MW *oed*, Co. *o*, Bret. *oa* is derived from **esāt*, and corresponds exactly to the Latin imperfect *erat*. Both have undergone the same functional transformation from optative to imperfect, as demonstrated by

⁷ Thurneysen, *OIGr.* 79, 95.

Benveniste for *erat*.⁸ This explanation for *oed*, proposed by Pedersen (*VKG* 1.73, 2.430), is upheld by Jackson (*LHEB* 350), and is far more likely than Morris-Jones' derivation (*WG* 100, 335) of *oed* from **siyēt*. There is no evidence anywhere else in Celtic for the optative suffix *-yē/i-*; if there were, it would show *i* for IE *ē*. Finally, this optative suffix shows paradigm apophony, and in such cases the zero-grade was generalized in Common Celtic. MW *oed* continues **esāt*.⁹

Another form continuing an *ā*-subjunctive is the MW 3 sg. *el* (MnW. *el*, *elo*), MCo. *el* (later *ello*), MBr. *a y-el* (*a y-elo*), from Common Celtic **[p]elāt*; it is the suppletive subjunctive of the verb 'go', W 1 sg. *af* < **agami*.¹⁰ W *el* < **[p]el-ā-t* is typologically identical with the Old Irish subj. 3 sg. *-era* 'grants' < **[p]er-ā-t* (pres. *ernaid*). The final **-āt* in the 3 sg. regularly disappeared in Brittonic, with the loss of final syllables. This implies that an *ā*-subjunctive still existed, at least in this word, until the latter part of the fifth century A.D., where Jackson dates the beginning of the loss of final syllables (*LHEB* 632). The forms with *-h-* in the rest of the paradigm outside the 3 sg., e.g., 1 pl. *el(h)om*, represent a later analogical influence of the productive subjunctive type in *-ho-*. The same accounts for the more recent 3 sg. forms in *-o*, which were independently developed in historical times in the three Brittonic languages.

The final form which proves the conservation of the *ā*-subjunctive in Brittonic is the subjunctive of *bot* 'be'. The paradigm has been given above. The basic nucleus of this form appears in Co. *bo-*, and goes back to **bā-* giving Brit. *bō-* by the beginning of the sixth century A.D. (*LHEB* 292). It is identical with the Old Irish subjunctive and imperfect-preterite absolute of the copula: *bá*, *ba*. For the

⁸ 'Prétérit et optatif en indo-européen', *BSL* 47.11-20 (1951).

⁹ The arguments of W. Krause, 'The imperfect in British and Kuchean', *JOS* 1.24 ff. (1949), are formally unconvincing, though the functional transformation is quite clear.

¹⁰ *VKG* 2.356, *LP* 288. The same root in Old Irish furnishes the suppletive future *-ebla* to *agid* 'drives', as well as the presents *-ella*, *-lá*.

Welsh forms, see further below. In the function of a subjunctive (< optative) it is Common Celtic in date. The functional transfer in Irish was from modal form to imperfect, like Welsh *oed* < **esāt*, as has been demonstrated by Benveniste (*BSL* 47.19), and not the other way around, with Thurneysen (*OIGr.* 488). Common Celtic **bā-* is even older, since it can be equated with Common Italic **bā-* (both from IE **bhwā-*) which appears in the Italic imperfect, Lat. *-bā-*. The basic function was the modal one, which subsequently was transformed to an imperfect tense; there was evidently at a somewhat later period a functional conflation of imperfect and preterite of the copula in Irish, which resulted in a redistribution of the forms proper to each. The 3 sg. abs. *ba* represents the old imperfect, whereas the 3 sg. cjt. *-bo*, *-bu* represents the old preterite, and can be equated with the MW 3 sg. pret. *bu*. Both reflect **bow*' < **bowe*, cf. *OIGr.* 483, *LHEB* 373 n. 2.

The forms discussed above prove the existence in Proto-Brittonic of a subjunctive in *-ā-*, which would regularly give *-o-* in Cornish and Breton, via British *-ō-*. We have likewise seen that the mark of the subjunctive in Brittonic is *-ho-*, with *-h-* from *-s-*. Combining these two, the obvious reconstruction for the subjunctive sign is **-sā-* (preceded by a vowel, v. infra), which would yield directly Co. Bret. *-ho-*. The same form underlies the Welsh subjunctive, but it has undergone a further analogical transformation, which will be discussed below.

A subjunctive in **-sā-* is not Common Celtic; nothing comparable is found in Goidelic. But we have in Early Welsh one clear indication of the channel for its formation, as a Brittonic innovation. This is the MW perf. subj. 3 sg. *rydecho* 'flees', **tek-s-*: OIr. subj. *tess-* to *techid* 'id.'

The distribution in terms of root final consonant of the three surviving *s*-subjunctives in Early Welsh, *duch*, *gwares*, *gwnech*, together with the fourth reflected in *rydecho*, agrees precisely with that in the Old Irish *s*-subjunctive: roots in final velar or dental. The functional pressure of the encroachment of the earlier perfect assuming the value of

the aorist, and ousting it from the aspecto-temporal to the modal plane, can be assumed in these forms in Welsh just as in Irish. Aorist **deuk-s-* was replaced by perfect **douke* (pret. *dug*) ; aorist **wo-ret-s-* (*gwares*) by perfect **wo-rāt-* (pret. *gwarawd*) ; aorist **wreg-s-* by the suppletive pret. *go-r-uc* : OIr. *ro-ucc-*. We may assume the same for **tek-s-*, replaced by **tāk-* as in OIr. *tách-*. For these reasons it is evident that the functional shift from *s*-aorist to *s*-subjunctive in roots of this structure is Common Celtic in date, contemporary with the functional conflation of aorist and perfect into a new, purely temporal preterite. The Proto-Brittonic forms such as **deuk-s-*, **ret-s-*, **wreg-s-*, **tek-s-*, being posterior to the Common Celtic period, were a fortiori already *s*-subjunctives.

Under these circumstances it becomes clear that the subjunctive value of *rydecho*, presupposing **tek-s-ā-*, is doubly marked : by *-s-* and by *-ā-*. The suffixation of the modal sign *-ā-*, which was preserved in Proto-Brittonic as is proved by the forms quoted above, thus reinforced the subjunctive value of the stem **tek-s-*, itself Common Celtic as is proved by OIr. *tess-*. The result of this was the creation in Proto-Brittonic of a new subjunctive sign *-sā-* beside the older *-s-* and *-ā-*. It is predictable from Kurylowicz's first law of analogy that the compound morpheme (*-s + ā-*) will replace the functionally identical simple morpheme (*-s-* or *-ā-*).¹¹ This is precisely what occurred ; the *ā*-subjunctive survives as such in one form alone in Early Welsh (*el*), the *s*-subjunctive only in three.

There is still the problem of the vowel before the suffix **-sā-*, which must be assumed for the productive subjunctive sign *-ho-*. The simplest explanation of this vowel, and morphologically the most plausible, is to assume a short *-a-* : the full form of the suffix is **-asā-*. This *a* represents the same vowel that appears before the suffix *-s-* (later remade to *-ss-*) in the basic form of the weak *s*-preterite : MW 3 sg. *-as*, OIr. 3 sg. abs. *-ais/cjt.* -*ø* < *-asti/-ast*. The origin of the vowel is the same in both cases ; it represents

¹¹ For the principle see the first Appendix infra.

the final phoneme of laryngeal (set) roots of the structure *TERH-* > Celt. *TERa-*, which has been incorporated in the suffix, *-s-* → *-as-*, and generalized beyond its original, etymological bounds. For the details of this morphological transformation, see the chapter on the *s*-preterite, as well as the appendices on morphological reflexes of laryngeal in Celtic. The situation in Celtic is identical with that of the replacement of the *-s-* aorist by the *-is-* aorist in Sanskrit ; the source of Skt. *-i-* is also laryngeal (set) roots. The same is true of the general Sanskrit tendency toward the spread of set forms at the expense of anit forms.

In the Proto-Brittonic subjunctive the first transformation is the creation of a new subjunctive suffix **-sā-*. The second transformation is the creation of a newer subjunctive morpheme **-asā-* from the suffixation of **-sā-* to roots in final *-a*. This new suffix **-asā-*, again in accord with Kuryłowicz's first law of analogy, spread beyond its original bounds, and almost completely replaced the older, less complex variant **-sā-*. It is in the ubiquitous and doubtless quite late spread of **-asā-* to essentially every verb in the language, that the origin of the peculiar juncture phenomena around this suffix are to be sought.

We have reconstructed a subjunctive suffix of the shape **-asā-*, which in British gave- (*a*) *hġ-*, and appeared in Cornish and Breton as *-ho-*. Such a suffix form cannot directly account for the Welsh subjunctive *-ho-* (~ *-hoe-*) ; but we have one precious indication that the suffix **-(a)hġ-* did exist in this form in Primitive Welsh as well. A regular phonetic reflex of this suffix occurs in Middle Welsh, but not in the function of a subjunctive : the MW future forms in 3 sg. *-haud*, e.g., *briuhaud* ' will break ' , *gwnahaud* ' will make ' , *llwyprawd* ' will travel ' (with provection) (Strachan 84, *LP* 279). These forms all reflect absolute 3 sg. forms of the subjunctive : *-haud* < **-asā-ti*. The 3 sg. conjunct form *-haw* may be analogical in origin, representing simply the creation of a zero-ending ; but it is conceivable that it directly continues **-asā-t*, since the presence of a juncture before the Prim. W. reflex *-haw* might have resulted in its

being treated as a monosyllable : $*-asā-t > *-+haw$. These forms in Early Welsh were clearly displaced from their original subjunctive function to a temporal future, by the encroachment of the new Welsh subjunctive in $-hoe$.¹² The conservation of these forms in $-haw$ was marginal ; they never became a productive future type in Welsh, and ultimately disappeared entirely.

There remains only the problem of accounting for the Welsh subjunctive sign $-ho/-hoe$, which cannot directly reflect $*-asā$ -. The internal chronology of these forms in the texts in Old and Middle Welsh shows that the older forms are those in $-hoe$ (which would be $-hoi$ in Old Welsh), as seen already by Evander Evans in 1873.¹³ The 3 sg. form $-(h)wy$ is only a variant of $-(h)oe$, 'a comparatively late thing' as Jackson has termed it, *LHEB* 380, and the 3 sg. $-(h)o$ is simply an apocopated form of $-(h)oe$; cf. *LHEB* *ibid*. The forms outside the 3 sg. are built on the 3 sg. form by the addition of the personal endings, with the 3 sg. taken as showing a zero-ending, according to the familiar process described in chapter seven above : 3 sg. $-oe \rightarrow$ 1 sg. $-oef$, $-wy \rightarrow -wyf$ (generalized in Middle Welsh). The process was later repeated, after the change $-oe > -o$; 3 sg. $-o \rightarrow$ 1 sg. $-of$, etc. (generalized in Modern Welsh).

To explain the subjunctive ending $-(h)oe$ in Early Welsh it is necessary to consider the subjunctive of *bod* : MW *bo*, OW *boi*, *boit*. The oldest form in Brittonic must have been $*bā-t$, Brit. $*bō[t]$.¹⁴ This form is the immediate ancestor

¹² Note that the Old Breton forms commonly cited with the Welsh futures in $-haud$, e.g., *fleriot* gl. redolet, *crihot* gl. uibrat, *cospitiot* gl. titubauerit (*LP* 279), are not specifically futures. Since Breton shows $-h$ otherwise only in the plural forms of the subjunctive, one is tempted to regard the $-h$ of *crihot* simply as a hiatus marker ; in other words, the Breton forms are simply 3 sg. abs. forms of a -presents in $-ā-ti$, and as such are unrelated to the Welsh subjunctives in $-hawd$ $*-asā-ti$.

¹³ 'Studies in Cymric philology II', *Arch. Camb.* 4.147-9. His conclusions are supported by the further evidence collected by M. Nettlau, 'Observations on the Welsh Verb', *Y Cymmrodor* 9.62-4 (1888).

¹⁴ I assume the loss of the final stop but the preservation of the vowel nucleus in monosyllables of this type, as in W *rhî* 'king' < $*rīg-s$. The same would account for the conjunct suffix form $-haw$ above.

of Co. *bo*. It would not, however, yield MW *bo* (one would expect **baw*), and certainly not OW *boi* or *boit*. Of these two, the form in *-t* is in all likelihood simply the imperative 3 sg. form (MW *boet*), used as a subjunctive. The basic form is OW *boi*, and MW *bo* is a regular phonetic development of this.

The two Indo-European roots **es-* and **bheu-* have influenced each other in form in the Celtic languages: cf. *OIGr.* 482, *VKG* 2.419. In my opinion the most likely explanation for OW *boi* is that the original **bq̄* has taken over the final of the indicative 3 sg. seen in OW *hitt-oi* (*LP* 322): **bq̄ + i > *bqi*. From this 3 sg. form *boi*, with its later alternant *bwy*, the rest of the paradigm was built, as we have seen. The resultant pattern was one of paradigmatic isomorphism between present indicative and present subjunctive: indic. 1 sg. MW *wy-f* (archaic *oe-f LP* 322), 3 sg. OW *-oi* (MW *yw < *wy*) = subj. 1 sg. *bwy-f*, 3 sg. OW *boi*. In the beginning of the Old Welsh period these forms would have been exactly parallel: indic. *oi-ǃ*, *oi* = subj. *boi-ǃ*, *boi*. This analogical change from *bq̄* to *bqi* after the modal of *qi* 'is' must have occurred after the development of *qi < |ẽi/[ē̃i]*, which Jackson places 'in the early or mid-eighth century' (*LHEB* 329-30). On the other hand, it probably occurred before the change *q̄ > au* in stressed syllables, dated by Jackson 'in the course of the eighth century' (*LHEB* 295-6), since **bau + i* is less likely to have yielded *bqi*. For these reasons I would date the creation of *bqi* to about the middle of the eighth century. It could have been later, if one accepts a restructuring of **bau + i* to **bqi*; but it could not have been any earlier. It is well after the separation of Welsh, Cornish, and Breton, completed at the end of the sixth century (*LHEB* 5).

It is from the subjunctive of the verb *bot*, with stem *boi-*, that the Welsh subjunctive suffix *-hoe-* (= OW **-hoi-*) has taken over analogically its characteristic form. The result was that the original *-(+)-hq̄-* was simply everywhere replaced by the new suffix *-(+)-hoi-* in the subjunctive function. In a few cases the old form *-(+)-hq̄-* was preserved

as $-(+)\textit{haw-}$, but only by virtue of assuming a new function, that of a future tense. The Early Welsh subjunctive suffix $-\textit{hoi-}$ (MW $-\textit{hoe}$) subsequently lost the second element of the diphthong in the 3 sg., giving $-\textit{ho}$. It thus fell together in appearance with the subjunctive suffix of Cornish and Breton; but its history is different. The suffix form $^*\textit{-asā-}$ is Common British, appearing in Co. Bret. subj. $-\textit{ho-}$ and OW, MW fut. $-\textit{haw-}$. The OW subj. $-\textit{hoi-}$, while based on Brit. $-\textit{asā-}$, nonetheless represents a distinctive innovation of Primitive Welsh, $-\textit{hō} + \textit{i}$. That it later fell together in outward form with the Cornish and Breton subj. $-\textit{ho-}$, is only a historical accident.

§ 13. THE t -PRETERITE.¹

THE t -preterite is perhaps the most notorious verbal category in the older Celtic languages. This formation is characterized by the suffixation of a preterite sign $-t-$ directly to a primary verbal root. We may give as a typical example the conjunct t -preterite of Old Irish *berid* 'bears':

sg. 1 $-\textit{biurt}$	pl. $-\textit{bertammar}$
2 $-\textit{birt}$	$-\textit{bertid}$ (cf. $-\textit{ru-bartid}$)
3 $-\textit{bert}$	$-\textit{bertar}$, $-\textit{bertatar}$ ²

Since the early period of scientific interest in the Celtic languages, nearly every Celtic scholar has expressed an opinion on the origin of this formation.³ E. Windisch suggested that the $-t-$ represented the suffix of Latin *flec-t-ō*, and essentially the same explanation, brought up-to-date,⁴

¹ A summary version of this chapter was presented at the International Congress of Celtic Studies, Dublin, July, 1959.

² The form with syncope is the older, and more regular; cf. *OIGr.* 434.

³ Relevant bibliography: W. Stokes, *Kuhns Beitr.* 7.24–8 (1873); E. Windisch, *Kuhns Beitr.* 8.442–69 (1876); H. Zimmer, *KZ* 30.198–217 (1888); J. Strachan, *Bezz. Beitr.* 13.128–31 (1887); R. Thurneysen, *KZ* 37.111–20 (1900), 37.424 (1901); H. Pedersen, *VKG* 2.377–8 (1913); J. Vendryes, *RC* 42.389 (1925); A. Meillet, *BSL* 26.6 (1925); A. Sommerfelt, *Symbolae Rozwadowski* 1.255–63 (1927); V. V. Ivanov, *Vestnik Moskovskogo Universiteta* 1957, No. 2, p. 35; H. Wagner, *ZCP* 28.1–18 (1960); C. Watkins, *Ériu* 19.25–46 (1962).

⁴ Note however that the $-t-$ of *flectō* is more likely a root enlargement in Benveniste's sense, than a suffix morpheme. See his *Origines* 153.

was later proposed successively by J. Vendryes, A. Meillet, and A. Sommerfelt: the suggestion of a present-forming suffix **-te/o-*. Vendryes had compared the Oscan *-tt-perfectum*, but this is itself an unknown quantity. Thurneysen's critique of this explanation (*OIGr.* 422) remains valid: the derivation of the *t*-preterite 'from original present stems with suffix *-te/o...* explains neither the flexion nor the preterite meaning satisfactorily.' Thurneysen in this was simply following H. Zimmer, who had already in 1888 disposed of Windisch's explanation: 'Wie wollen wir uns erklären, dass nirgends eine spur der dazu gehörigen präsentia erhalten ist?' (Zimmer, *KZ* 30.198). The third singular is furthermore clearly athematic in the *t*-preterite, and there is no trace of a present-forming suffix **-te/o-* elsewhere in Celtic; that such a suffix should be restricted to a preterite formation is unthinkable, particularly since the Indo-European secondary endings required for the 'bridge' from present to past time functioned in Celtic as conjunct endings in the present system as well as in the past. The Celtic languages did not inherit any purely temporal diathesis expressed by the endings alone.

J. Strachan in 1887 and H. Zimmer in 1888 were the first to suggest, apparently independently, that the *-t* of such a form as *-bert* represented a third singular verb ending, which was subsequently generalized throughout the paradigm. Both scholars favoured the Indo-European secondary middle ending **-to*; they differed in that Strachan suggested an original athematic root aorist **bher-to*, whereas Zimmer favoured an original sigmatic aorist **bher-s-to*. Zimmer's discussion of the *t*-preterite (as a reflection of the Indo-European sigmatic aorist) appears as an excursus on his pioneering work, 'Die Schicksal des indogermanischen *s*-aorists im irischen und die entstehung des keltischen *s*-präteritums', *KZ* 30.112-98 (1888) (*Keltische Studien* 7.) It is one of the earliest attempts to explain the Celtic verb historically on its own terms; the technique of internal reconstruction is implicit in his method. As will appear in the subsequent discussion, Zimmer was fundamentally

right ; but his and Strachan's view that the 3 sg. ending was a middle form was incorrect, and he failed to state adequately the case for sigmatic origin, partly because the base of his explanation included certain errors of fact.

In 1900 Thurneysen devoted a lengthy study to the *t*-preterite. He analyzed the formation as an Indo-European root aorist, in this following Strachan, but recognized quite correctly that the *-t* must continue the Indo-European athematic 3 sg. active ending. With OIr. *-bert*, etc., he compared the Vedic aorists of the type 3 sg. *agan* 'went' *akar* 'made' < IE **e-gwem-t*, **e-kwer-t*. It was this *-t* which was then analogically generalized throughout the paradigm, after being interpreted as a stem-final mark of the preterite rather than a desinence. In this view Thurneysen was followed completely by Pedersen, *VKG* 2.377-8.

Aside from the studies of the Paris school (*supra*) the only scholars to have advanced any other suggestion subsequent to Thurneysen have been V. V. Ivanov and H. Wagner. Ivanov calls attention in brief and summary fashion to the similarity between OIr. *-ort* 'slew' (in the traditional view coming from **org-t*) and the Hittite 3 sg. preterite *harkta* /*harkt*/ 'perished'.⁵ But the *t*-preterite of *orgid* is a secondary development within Celtic, as will be shown in full below ; and in view of the functional history of the Celtic verb, with its clear reflexes of both an aorist and a perfect, it is unsound to look in Celtic for a lineal reflection of a verbal system with only a present and a preterite, as in Hittite. The equation OIr. *-ort* = Hitt. *harkta* is a good example of the danger inherent in isolated lexical comparisons, without attention to the position in the structure of each of the forms compared ; even though cognate, these two are merely accidentally similar.

Wagner has attempted to derive the Celtic *t*-preterite from the Indo-European *-to-* verbal adjective, on the basis

⁵ What Ivanov had in mind by his 'Celtic *org-n-* with analogical nasal affix' I do not know, unless it is the Old Irish verbal noun *orgain*. The nasal affix appears only in Hitt. *harnikzi* and Arm. *harkanem*.

of a comparison with the Old Church Slavonic root aorist 3 sg. *-tŭ*, and the Germanic weak preterite. On purely formal grounds this explanation cannot be upheld for the *t*-preterite, since the latter shows full grade root, whereas the *-to*-participle required zero-grade root form where the root was *TER-*, as proved by the Old Irish preterite passive : *-cleth* < **kl-to-*. On functional grounds as well, his explanation cannot be upheld, in view of the nearly universal transitive character of the *t*-preterite forms attested ; a formal origin in the *-to*-participle would only be explainable if the basic nucleus of the forms were intransitive, as is the case in the comparable Slavic and Germanic classes. I have shown in detail in *Ériu* 19.25 ff. (1962) why Wagner's explanation of the Celtic *t*-preterite is incorrect, as well as demonstrating the necessary functional conditions for the development of the *-to*-participle to Slavic *-tŭ* and the whole weak preterite in Germanic.

Thurneysen's explanation of the *t*-preterite as an athematic root aorist has to-day come to be canonical ; hallowed by some sixty years of tradition, it is to my knowledge the only one generally taught to-day. Yet there are grave defects in this analysis, many of which were already seen by Sommerfelt in 1927, and indeed many already by Zimmer forty years before that.

In the first place it would be surprising to find so archaic a grammatical feature of Indo-European as the athematic root aorist still flourishing, even in transmuted form, in a group of languages attested only from the Middle Ages. The athematic root aorist is already an archaism in the *Rig Veda*, the *Gathas*, and in Homer. And of the two other western Indo-European language groups, Germanic and Italic, neither shows any trace of the preservation of such a category.

In the second place, practically none of the *t*-preterites attested in Old Irish correspond to athematic root aorists from the same root in cognate languages : our only example would be *-sert* 'spread' beside Vedic *astar*. There are indeed contrary examples. The root **bher-* had in Indo-European

a durative, not a punctual sense, and hence was confined to the present system ; the situation is reflected faithfully in Latin *ferō/tulī*, Gk. *φέρω/ῥνεγκον* or in the irregular reduplication of the Vedic perfect *jabhāra*. An aorist **(e)-bher-t* never existed in Indo-European, as has been shown by Meillet, *Festschrift Kretschmer* 140-1 (1926). This supposed Celtic expansion of the athematic root aorist would be in striking contrast with those other later Indo-European languages preserving vestiges of this aorist, where the form is always a directly inherited one : cf. Armenian *ekn* 'he came' = Sanskrit *agan*, or (ignoring the desinences) Old Church Slavic *strētŭ* = Skt. *astar*, *-mrētŭ* = Skt. *amṛta*. The full comparative evidence for this argument against the traditional derivation of the *t*-preterite has been already presented in detail by Sommerfelt ; it need not be repeated here.

There is a third argument against the traditional derivation of the *t*-preterite from a root aorist, of a purely formal nature. Just over half of the roots attested with *t*-preterite in Old Irish of the original stock, i.e., roots in final *-r*, *-l*, *-m*, are from the Indo-European point of view laryngeal (set) bases, not *TER-* but *TERH-*.⁶ While in Celtic an Indo-European **bher-t* would yield **bert*, an Indo-European **g^welH-t* (*g^welə-t*) would yield not **belt* but **belat*, Old Irish **bel*. The proof of this is furnished by comparing one of the few true root aorists in Old Irish : *do-cer* 'fell, perished' < **kerat*, IE **kerH-t* = Skt. *aśarīt*. Given the situation of numerically comparable variants in *-at* and *-t*, any analogical levelling would have been in favour of the more characterized variant in *-at*, where the *-a-*

⁶ The set (laryngeal) roots are : *sem-*, OIr. *do-essim* 'pours out' (Lith. *sėmti* 'draw water', *sąmtis* 'ladle' with acute) ; *mer-*, OIr. *marnaid* 'betrays' (*na*-present) ; *ser-*, OIr. *sernaid* 'spreads' (*na*-present = Skt. *str̥ṣāti*) ; *dar-* OIr. *dairid* 'bulls' (Gk. *θρῶσκω*) ; *gar-*, OIr. *gairid* 'calls, invokes' (best to Skt. *gṛ̥ṇāti*, Lith. *girti* 'praise') ; *bel-* OIr. *at-baill* 'dies' (best to Gk. *βάλλω*, *ἐβαλον*, *ἐβλην* ; despite W. Meid, *Die Sprache* 6.148-50 [1960]) ; *mel-*, OIr. *melid* 'grinds' (Lith. *malti*, Russ. *molót* 'id.' with Balto-Slavic acute, Lat. *molitus* < **molato-* < **mola-to-*) ; a total of seven out of thirteen.

would function essentially as a thematic vowel. For the demonstration of this, see the Appendix, § 15. The same reasoning explains the rather similar case of the replacement of athematic by thematic forms throughout the history of Indo-European. For the spread of 'seṭ' at the expense of 'aniṭ' forms in Celtic we may compare the replacement of *-sā-* by *-asā-* in the Brittonic subjunctive, as discussed in the preceding chapter. The situation is a recurrent one; exactly parallel is the spread of the *-iṣya-* future from seṭ to aniṭ roots in Sanskrit, and mutatis mutandis the Sanskrit desiderative and the Old Irish future, where the root appears in zero grade, and the seṭ treatment *-TRH-se/o-* (> Skt. *Tir-ṣa-*, Celt. *TRā-se/o-*) spread to aniṭ roots as well. From Old Irish one may give *ebraid* 'will grant' < **pi-prā-seti* as an example of a seṭ (laryngeal) root (**perH-*), and *génaid* 'will slay' < **gi-ḡnā-seti* as an aniṭ root (IE **g^when-*) with analogical root vocalism.

In Indo-European a root athematic aorist could be formed on any root, irrespective of its structure: *TER-*, *TET-*, *TERT-*, *TERH-*, *TRET-*, *TREH-* are all attested. If Celtic had in fact preserved the old category of root aorists, and indeed extended it within the Celtic period, then we should expect that in Celtic as well it could be formed on roots of practically any structure. But in fact the distribution of the *t*-preterite in Celtic is curiously limited. It is formed on roots in final *-r* *-l* *-m*, but not *-n*; ⁷ it is formed on roots in final *-g*, but not *-k*, nor any other stop or *s*. Zimmer clearly saw the import of this; it is only unfortunate that his account of the distribution was not accurate, and he had too many possible root finals. Compare *op. cit.* p. 199: 'Ferner, das *t*-präteritum kommt nur von wurzeln auf *r*, *l*, *c*, *g* und nasale vor, nicht von solchen auf *d*, *t*, *s*: ist dies nicht auffallend?' It is indeed suspicious.

⁷ O. Bergin has suggested (*Eriu* 12.227-9 1938) that the suppletive 3 sg. pres. abs. *téit*, cjt. *-tét* of *tíagu* 'I go' reflects an Indo-European **ten-t(i)*, equatable with Skt. *átan*. His comparison is probably correct; but the Irish form is a present, not a preterite, and since in **ten-t(i)* the structure is simply root + desinence, with no other formal mark, the inherited **ten-t(i)* was probably an athematic present from Proto-Celtic onward. The form *téit* has nothing to do with the *t*-preterite.

By the hypothesis of an Indo-European root athematic aorist it simply cannot be accounted for, and that hypothesis must therefore be considered incorrect.

Yet another solution to the problem of the origin of this formation can be envisaged. We have already stated the hypothesis to be presented here: the origin of the *t*-preterite in the sigmatic aorist. We have likewise noted that the basic evidence for this hypothesis lies in the peculiar distribution of the *t*-preterite in the Celtic languages, particularly in Old Irish. The nature of this evidence may now be examined.

A Common Celtic verbal root could end in *-T*, *-R*, *-E*. There are no other possibilities. We have already seen that essentially all Celtic primary verbal roots in final *-T* showed a sigmatic formation in Common Celtic, which developed by a functional transfer from aspect to modality into the historical *s*-subjunctive. This is in essence the situation still reflected in the distribution of the *s*-subjunctive in Old Irish in historical times: roots in dental and velar. And it has been recognized from the beginning of Celtic comparative grammar that the *s*-preterite, which is formed by all roots in vocalic stem-final (*-E*), must likewise go back in some way to the Indo-European sigmatic aorist. It is evident, then, that with a tiny number of exceptions every Common Celtic root in *-T*, and every root in *-E*, formed a sigmatic aorist.

The pattern of the great extension and expansion of the sigmatic aorist in the individual dialects has been established unequivocally by Meillet. We know as well from the examination of such languages as Greek, Sanskrit, Latin, and Old Church Slavonic, that the extension of the suffix *-s* took place with all types of verbal roots, those in final resonant as well as final stop or final vowel. As we have seen, Common Celtic verbal roots could end in *-T*, *-R*, and *-E*. Hence if Celtic shows a universal sigmatic aorist for roots in *-T* and *-E*, and shows in addition an ostensibly asigmatic aorist, the *t*-formation, only for roots in *-R*, then the logic of complementarity alone imposes the hypothesis of a sigmatic origin for the roots in *-R* as well.

On the evidence of Meillet's original study, the hypothesis of sigmatic aorist origin for the *t*-preterite, as a chronologically later formation of the individual languages, is inherently more plausible for Celtic than that of the archaic athematic aorist. If the absence of *-s-* in the *t*-preterite, its ostensibly asigmatic character, can be accounted for by a regular phonological transformation; if the hypothesis of sigmatic origin can also account for the peculiar restrictions on the distribution of the *t*-preterite; and finally if no other hypothesis can satisfy these conditions; then that hypothesis—the sigmatic origin of the *t*-preterite—has come as close to verification as is usually possible in historical linguistics.

We may examine the formation of the *t*-preterite as it is attested in Old Irish. Thurneysen's formulation is that the *t*-preterite is formed by 'all the roots in *-r* and *-l*, and some in *-m* and *-g*'. We have the following forms in Old Irish, which I cite in 3 sg. conjunct form, even though in some cases such a form is not actually quotable since the verb is always compounded with more than one preverb. I have set beside each *t*-preterite the Celtic root form, deducible from the subjunctive stem in *-ā-*, or the present indicative where the subjunctive is in *-s-*.

roots in <i>-r</i> :	pret.
<i>ber-</i>	<i>-bert</i> 'bore'
<i>ger-</i>	<i>-gert</i> 'heated'
<i>ser-</i>	<i>-sert</i> 'spread'
<i>mer-</i>	<i>-mert</i> 'betrayed'
<i>dar-</i>	<i>-dart</i> 'bulled (a cow)'
<i>gar-</i>	<i>-gart</i> 'called'

roots in <i>-l</i> :	
<i>kel-</i>	<i>-celt</i> 'hid'
<i>gel-</i>	<i>-gelt</i> 'grazed'
<i>mel-</i>	<i>-melt</i> 'ground'
<i>bel-</i>	<i>-belt</i> 'died'
<i>al-</i>	<i>-alt</i> 'nourished'

roots in *-m*:

<i>em-</i>	<i>-ét</i> 'took'
<i>sem-</i>	<i>-sét</i> 'poured'

roots in *-g*:

<i>ag-</i>	<i>-acht</i> 'led'
<i>aneg-</i>	<i>-anacht</i> 'protected'
<i>mag-</i>	<i>-macht</i> 'increased'
<i>reg-</i>	<i>-recht</i> 'stretched'
<i>sag-</i>	<i>-siacht</i> 'sought'
<i>org-</i>	<i>-ort</i> 'slew'

It is probable that this list could be extended by a few forms, had we fuller documentation from Old Irish. Among the strong verbs in *-r* and *-l* there are some for which no preterite at all is attested, such as *airid* 'ploughs', for which we should expect **-art*. Likewise there are occasional forms found in the texts, which look like *t*-preterites but are simply obscure: cf. *da-r-ind-gult* i. *rogellus* (LU 6020), or *ro-selt* (BDD² 913, and cf. Met. Dinds. iii 519). But such cases are small in number. It may be fairly assumed that all strong verbs in *-r* and *-l* form the *t*-preterite.

From the Brittonic languages we have the following forms of the *t*-preterite (Middle Welsh, except as marked): *cymerth* 'took' < *ber-* (OIr. *berid*); OBret. *ar-uuo-art* 'fascinavit' < *gar-* (OIr. *gairid*); *cant* 'sang' < *kan-* (OIr. *canid*); *gwant* 'pierced' < *gon-*⁸ (OIr. *gonid*); *aeth* 'went' < *ag-* (OIr. *agid*); *gwreith* 'made' < **wreg-*; *maeth* 'nourished' < *mag-* (OIr. *moigid*, *do-formaig*, OW *di-gwor-mechis*) *dyrreith* 'returned' < *reg-* (OIr. *reg-*); *dydwyth* 'brought', *amwyth* 'protected' (on which two see below).

These forms agree with Old Irish in distribution and attestation, with the exception of *cant*, *gwant*, *dydwyth*, *amwyth*. The first two have a reduplicated preterite in Old Irish: *cechain*, *geguin*. Thurneysen in his original study recognized that the Welsh forms were late and analogical, built simply on the model of the identity of *t*-preterite

⁸ For the treatment see D. A. Binchy, *Celtica* 3.229-30 (1956).

3 sg. and preterite passive (*-to- participle) after the loss of final syllables. Welsh *cant* and *gwant* are of identical origin as early Middle Irish -*cét* 'sang' (SR 7533) : simply a hypostasis of the preterite passive -*cét* 'was sung'. Secondary origin is likewise indicated for *dydwyth amwyth*. Both forms have beside them the regular preterites 3 sg. *dyduc*, *amuc*, and for the simplex *dwyn* 'lead' (compounded in *dy-dwyn*) only the preterite *duc* < IE **douke* is attested. The forms *dydwyth*, *amwyth* go back to passive participial formations, **duk-to-* and perhaps **uk-to-*,⁹ exactly as *cant*, *gwant*, or MIr. -*cét*. The several forms analogical to the preterite passive in *-to- represent the most recent forms of the *t*-preterite in historical Goidelic and Brittonic; posterior to the loss of final syllables, they are simply parallel innovations in the two branches of insular Celtic, formed almost on the eve of the historical period.

In reference to the lateness of this development it should be noticed that the identification of the preterite passive in -to- and the *t*-preterite could only have taken place outside the original group of roots in final resonant, in any case -*r* and -*l*. For in such roots the aorist morph was suffixed to the full grade root (e.g., **kel-s-*) whereas the preterite passive was formed on the zero grade : OIr. -*cleth* < **klito-* < IE **kl-to-*. It is only in the later and secondary formations of the *t*-preterite, to roots in -*g* in particular, that the appearance of the full grade in the preterite passive could produce confusions : cf. -*recht* < **reg-to-* = Lat. *rēctus*.

What does the characteristic distribution of the *t*-preterite in terms of root structure mean, in phonological terms? From Thurneysen's formulation we can set up two classes of root finals : -*R* (-*r* -*l* -*m* but not -*n*) and -*T* (-*g* alone). The roots in -*g* are phonetically and morphophonemically totally isolated, and there are numerous indications that the formation of the *t*-preterite by roots in -*g* is relatively late and secondary.

In the first place, we know that the opposition of voice between /*g*/ and /*k*/ was neutralized before /*t*/ already in

⁹ Formation and etymology of *amwyth* are uncertain.

the Common Celtic period; both appeared as [x], a contextual variant of /k/. Compare the Gaulish PN *Anextlo-mārus* from **aneg-tlo-*, OIr. *anacul* v.n. of *aingid*. The fact that we have in Old Irish a series of preterites ending in *-cht/-xt/*, formed only on roots ending in a voiced velar *-g* /*ɣ*/ and never in voiceless velar *-ch* /*x*/, is highly suspicious. It shows that the distribution is not phonological, but in some way represents an artificial morphophonemic situation. If Common Celtic *-g-t* is treated exactly as *-k-t*, then it is extremely unlikely that we should have no *t*-preterites from roots in Common Celtic final *-k*, if the category is viewed as a lineal descendent of an Indo-European athematic aorist.

In the second place, in other morphological categories of the Celtic verb, the distribution of formants is strictly regulated by the structure of the root, particularly by the root-final consonant. With a very small number of exceptions—which can be accounted for—, all *TET*-roots form an *s*-subjunctive, all *TER*-roots form an *ā*-subjunctive. This list may be expanded: with rare exceptions, all *TeT*-roots form an *ā*-preterite; all *TER*-roots form a *t*-preterite when *R* = *l*, *r*, *m*; all other roots in final *-T*, and in *-R* when *-R* = *-n*, form a reduplicated preterite. Hence when we observe that six Old Irish verbs in *-g* form a *t*-preterite, while the other fifteen Old Irish strong verbs in *-g* do not,¹⁰ but rather form the expected reduplicated or *ā*-preterite, then we are justified in looking for some secondary development to account for the six aberrant forms.

There are furthermore a number of individual cases where the formation of the *t*-preterite by roots in *-g* can be shown to be late from purely internal philological evidence. The 3 sg. form *-recht* occurs only in composition: *ess-reg-* 'arise', *aith-air-reg-* 'repeat'. The simplex *rigid* has a reduplicated preterite *reraig*, and *recht* serves only as preterite passive, regularly from the nominal form **reg-to-*: Lat. *rēctus*. Thurneysen himself has suggested that the

¹⁰ These are: *brag-*, *reg-*, *rig-*, *slig-*, *lig-*, *nig-*, *ding-*, *dlong-*, *tong-*, *mlig-*, *fig-*, *long-*, *bong-*, *ling-*, *dring-*.

t-preterite of this verb may be analogical to the preterite passive. Likewise *-macht* of *do-formaig* is restricted to composition. No preterite is attested for the simplex *moigid* (**mag-yo/i-*), since this became confused with the denominative *mōigid* at an early stage. Were a preterite of the simplex attested, one would expect reduplicated *memag-*.

A Celtic root with *a*-vocalism of the structure *TaT-* or *Tan-* may be expected to form a reduplicated preterite. The examples in Old Irish are *bebrag-* (*brag-* 'fart, bleat'), *cechlad-* (*clad-* 'dig'), *memad-* (*mad-* 'break'), *cechan-* (*can-* 'sing').¹¹ This is a characteristic morphological feature of the western Indo-European languages; it is shared also by Latin and Germanic.¹² We should expect then that *sag-* (*saigid* 'seeks, makes for') should form a reduplicated preterite **sesag-/sisag-*. This is in fact the form which underlies the Old Irish preterite *siacht*. The regular loss of intervocalic *-s-* resulted in the aberrant hiatus form **siag-*, which was totally isolated in the Celtic verbal pattern. It is evident that the morph *-t-* was simply added to **siag* > *siacht*, in order to stabilize the form, to give a clearer morphophonemic mark to a preterite which was formally aberrant and thus not distinctly characterized.

There is a further argument which shows the secondary character both of (*do-for*)-*macht* and 3.g. (*do-ro*)-*acht* beside (*ro*)-*siacht*. This is the suppression of the reduplicating syllable in prototonic verbal compounds, which resulted in identity in certain persons between present and preterite (similarly between subjunctive and future). Old Irish had recourse to various grammatical devices to avoid this ambiguity, such as the morphophonemic preverb alternants *roí-*, *foí-*, *coim-*. The suffixation of *-t-* in the preterite was only another such process. This feature can only be alluded to in the present study; I shall present elsewhere a detailed study of the morphophonemics of the reduplicating syllable in Celtic and in Italic.

¹¹ Not attested, but predictable, are: **senad-* (*snad-* 'cut'), **selad-* (*slad-* 'strike').

¹² See Ernout-Meillet, *Dict. étym. de la langue latine* ⁴ s.v. *canō*; Meillet, *Caractères généraux des langues germaniques* ⁷ 139 (Paris, 1949).

It is apparent from the foregoing discussion that the formation of the *t*-preterite by roots in *-g* represents a secondary and late accretion to this Common Celtic verbal category. We shall see below that it is possible to account for this secondary development; but what is significant is that the original stock of the Common Celtic *t*-formation is represented by the roots in final resonant, where that resonant is *-r* *-l*, or *-m*.

Let us consider then the *t*-preterites formed by roots in final *-m*.

Thurneysen's statement is that 'some' roots in *-m* form the *t*-preterite. The phrase is misleading, for while two verbs in *-m* have a *t*-preterite (*em-*, *sem-*) there are only two other strong verbs in *-m* in Old Irish which form a preterite:¹³ *daimid* 'admits' (*dam-*) and *ro-laimethar* 'dares' (*lam-*). Both of these form a deponent *ā*-preterite: *-dámair*, *-lámair*. These two forms are anomalous in *ā*-preterite class for three reasons: (1) the basic stem vowel is *-a-* (*lam-*, *dam-*) not *-e-*; (2) the root ends in a resonant, not a stop; (3) they are deponent. Within the *ā*-preterite, such divergence cannot be original; a root of the structure *TaR-* among all the other roots of the structure *TeT-* cannot be part of the original stock, and its presence in this class in Old Irish must be a historical accident.

Since *-laimethar* is deponent throughout the paradigm, whereas *daimid* is deponent only in the preterite, it is extremely likely that *-dámair* is analogical to the rhyming form *-lámair*, as indeed Thurneysen suggests (*OIGr.* 432). Such rhyme pairs are not infrequent in the Irish verb: cf. *-ménair* 'thought' after *-génair* 'was born'. The new *-dámair* (or its phonological antecedent) may well be a replacement of an earlier **damas-t(i)*, as in Hitt. *damaš-zi* and Greek *ἐδάμασσα*, outside the normal pattern and thus subject to analogical reformation.

¹³ There is in addition a fifth, *in-aim* 'washes hands or feet', on which see *Lang.* 35.18-20 (1959). But no preterite or perfect forms are attested anywhere in Irish, hence it may be discounted. We should expect a preterite **-ét*.

The only form to be accounted for is then *-lámaid*. This form is to be explained as a sigmatic aorist deponent **lām-s-ori*, with morphologically lengthened root vowel *-a-* before *-s-*, as seen in the Old Irish *s*-subjunctive (*sag-* : *sāss-*, OIr. *saigid*) ; the phonological treatment is *-āmsō-* > *-āmo-*. The ending **-ori* may be directly equated with the Hittite mediopassive 3 sg. *-ari*. This ending **-ori* is identical with that of the Old Irish present passive absolute *-air* < **-ori*, just as all the other endings of the Celtic present and the Celtic aorist are identical. The full paradigm of the deponent preterite, and the loss of the distinction between absolute and conjunct, represents an analogical assimilation of a much later date to the distribution of consonant quality in the first three persons of the active reduplicated and *ā*-preterite : deponent sg. 1 *-lámar* 2 *-lámar* 3 *-lámaid* after active *-cechan* *-cechan* *-cechain*, *-gád* *-gád* *-gaid*. In the plural the endings are identical.

Of the two forms *-dámair* and *-lámaid*, the first is only a rhyming form, and *-lámaid* can be explained as a sigmatic aorist formation ; with these two solitary exceptions accounted for, the rule can stand that all primary verbal roots in final *-r*, *-l*, and *-m* form a *t*-preterite. They represent the original nucleus of the *t*-formation in Common Celtic.

For the Common Celtic sigmatic aorist we may assume roots of the structure *TER-* suffixed by *-s-*. Typologically one may compare Common Greek sigmatic aorists such as *φθερ-σ-* (*ἔφθειρα*) *στελ-σ-* (*ἔστειλα*), *νεμ-σ-* (*ἔνειμα*), *τεν-σ-* (*ἔτεινα*). It is the phonetic reflexes of the clusters *-Rs-* in Celtic in position before stop which provides the solution to the problem of the distribution of the *t*-preterite. The crucial point is the 3 sg. sigmatic aorist of such roots, which would appear originally as *TER-s-t(i)*, with athematic ending.

The result of the sequence *-Erst-* in Celtic is the complete disappearance of *-s* ; *-Erst-* > *-Ert-*, as proved by the unassailable etymology OIr. *tart* 'thirst' < **tarsto-* < **trsto-* : OHG *durst* (for others see VKG 1.80-1). In view of the thorough-going parallelism between *-rs-*, *-ls-*, and *-ms-*, we can draw no other conclusion but that where

$R = rlm, -ERsT- > -ERT-$; the same was assumed already by Zimmer in 1888. But we know also that where $R = n$, $-ERsT- > -EsT-$; cf. *VKG* 1.81. The regular phonological treatment is divergent, just as in the case of *-ms-* and *-ns-* between vowels. It is this phonetic transformation which explains why there are no sigmatic formations at all to Celtic roots in *-n*. For a sigmatic aorist 3 sg. to the root *gon-* 'slay', **gon-s-t*, would yield **gost*, with a desinence *-t* suffixed to a root form **gos-* totally unrelated to **gon-*; there is no morphophonemic alternation $n : s$ elsewhere in the Celtic system. In the 1 and 2 sg. of the same aorist, *-ns-*, before vocalic endings, would regularly yield *-ss-*; a paradigm 1 sg. **gossū*, 2 sg. **gossi*, 3 sg. **gost*, is without structural parallel in the Celtic system. In the case of the roots in *-r -l -m* on the other hand, the regular disappearance of *-s-* in the 3 sg. left the root intact: **ber-s-t* **bel-s-t*, **em-s-t* $>$ **bert*, **belt*, **emt*.¹⁴ The apparent structure, root + *t*, simply could not exist in the case of roots in *-n*, where the final consonant of the root was lost, and the identity of the root impaired. The consequence of the change *-ns-* $>$ *-ss-* before vowel, but *-s-* before consonant, was simply that all trace of the sigmatic formation was abandoned by the roots in *-n*. In Old Irish they form their subjunctive in *-ā-*, like the other *TER-* roots, and their preterite by reduplication, like the *TET-* roots where *E* is not *e*.

It is thus the hypothesis of sigmatic origin alone, the hypothesis of the former presence of an aorist morpheme *-s-*, which can account historically for the restriction of distribution of the *t*-preterite to roots in *-r*, *-l*, *-m*, and its absence from roots in *-n*. In both cases this restriction is attributable to the morphological consequences of a regular phonological transformation.

There remains to be considered only the constitution of the paradigm of the *t*-preterite. After the partial replacement of athematic by thematic endings, as we have seen,

¹⁴ The cluster *mt* subsequently fell together with *nt*, and yielded *dd* $>$ *d* after lenition.

the first and second persons singular of the Common Celtic sigmatic aorist had desinences beginning with a vowel, as is clear from the respective *u*-quality and palatalization in the Old Irish forms of these persons in the *s*-subjunctive, *t*-preterite, and *s*-preterite. They can be reconstructed as 1 sg. **-ū*, 2 sg. **-ī*. Hence in the roots in final resonant where *R* = *rlm*, the cluster *-Rs-* (of the root suffixed by the aorist morpheme) in 1 and 2 sg. would have been preserved in Common Celtic.¹⁵ But the loss of *-s-* between *R* and *T* in the athematic 3 sg. is much earlier. The paradigm of the singular of **ber-* in the Common Celtic aorist 'conjunct' would thus have had the configuration

- sg. 1 **ber-s-ū*
- 2 **ber-s-ī*
- 3 **ber-t* < **ber-s-t*.

In all three persons the identity of the root *ber-* was preserved; but in the third singular, the fundamental member of the paradigm, the mark of the aorist *-s-* was lost, and thus the unity of the paradigm disturbed.

The result of this situation is precisely what we would expect from the discussion in chapter seven; the 3 sg. *bert*, historically of the structure ROOT + 3 SG. DESINENCE (*ber-t*), with the historical suffix phonetically lost, was morphologically reinterpreted as ROOT + SUFFIX + 3 SG. ZERO: *ber-t-ø*. This apparent suffix *-t-* proper to the third singular—again, the fundamental member of the paradigm, and the person from which a paradigm will be remade—was then generalized throughout the remaining persons, and completely ousted the earlier *-s-*:

- sg. 1 **ber-t-ū* (replacing **ber-s-ū*),
- 2 **ber-t-ī* (replacing **ber-s-ī*),
- 3 **ber-t-ø*.

The paradigm thus constituted was stable, and its synchronic structure clear: ROOT + *t* + DESINENCE (3 sg. = zero). It is continued exactly as such in the Old Irish conjunct forms, 1 sg. *-biurt*, 2 sg. *-birt*, 3 sg. *-bert*.

¹⁵ See *Lang.* 30.517-8 (1954).

In the matter of the endings, *-ū -ī -zero*, it is worth noting that the *t*-preterite had thus reestablished its historical identity as a sigmatic formation, both with the *s*-subjunctive and the weak *s*-preterite as well. Compare the paradigms of the singular conjunct:

<i>s</i> -subj. * <i>gess-ū</i> (- <i>ges</i>)	<i>s</i> -pret. * <i>karass-ū</i> (- <i>carus</i>)
* <i>gess-ī</i> (- <i>geiss</i>)	* <i>karass-ī</i> (- <i>carais</i>)
* <i>gess-ø</i> (- <i>gél</i>)	* <i>karass-ø</i> (- <i>car</i>).

In the plural of the *t*-preterite the original endings of the *s*-aorist were at some point in the history of Goidelic—after the generalization of *-t-* at the expense of *-s-*—replaced by the endings proper to the Celtic perfect (as continued in the Old Irish reduplicated and *ā*-preterites): *-ammar -aid -atar*. This is a secondary development, subsequent to the functional coalescence of the Common Celtic aorist and perfect. It is simply one stage in the general extension of these plural endings; in Middle Irish they spread likewise to the *s*-preterite. We have already noted another aspect of the same tendency: the refashioning of the deponent preterite of the type *-láimair* after the model of the active reduplicated and *ā*-preterite: 1 sg. *-C*, 2 sg. *-C*, 3 sg. *-C'*. This tendency, never completely carried out, was toward the creation of a set of endings proper to the preterite system, opposed to those of the present system. In Common Celtic the implementation of the Indo-European primary/secondary opposition as absolute/conjunct resulted in the identity of present and aorist endings, both opposed to the perfect endings. It was the functional conflation of aorist and perfect into the new preterite, which brought about the spread of perfect endings to replace the older aorist endings, as an accessory mark of the new opposition present/preterite. The *s*-subjunctive preserved the old endings of the *s*-aorist plural which were lost in the *t*-preterite (and eventually in the *s*-preterite), since by virtue of its modal function the *s*-subjunctive was outside the present/preterite opposition, and lost the association with the reflexes of the Celtic aorist.

It is finally possible to account for the peculiar Celtic secondary expansion of the *t*-preterite to roots in final *-g*. Put as briefly as possible, we may say that it is in essence a historical accident, due to a chance phonological development. The channel of this formation was the verb *orgid* (and perhaps others which disappeared before the historical period), with its rare structure *ERT*.

We should expect a Celtic verb of the structure *TERT*- to form a reduplicated preterite: cf. *-tethaind* (*tend-*), *-cechaing* (*keng-*); with regular loss of the reduplicating syllable in double composition, *do-ommalgg* (*melg-*), *ad-condarc* (*derk-*); with loss of the reduplicating syllable and morphophonemic identity with the *ā*-preterite, *fo-caird* (*kerd-*), *ro-scaird* (*skerd-*). But the root *org-* was excluded from the reduplicated class by its vocalic initial. Hence we must expect a form in *-s-*.

In the third singular we may assume a development **org-s-t-* > **orst-* > *ort*, exactly as in **prk-sk-* (: Lat. *poscō*) > **arsk-* > *ark-* (OIr. *arcu* 'I ask'). The resultant *ort-* was identical in structure with other *t*-preterites 3 sg. of the type *bert-*. But the relation *ber-* : *ber-t-* contrasted with that of *org-* : *or-t-* in that the root *ber-* was preserved intact. The result was that the form *ort-* was reinterpreted morphophonemically as reflecting **org-t-*, in terms of the proportion *ber-* : *ber-t-* = *org-* : *x-*. The morphophonemic process *-g-t-* → *-xt-* already existing in the language (e.g., *aneg-* → *anextlo-*) created in the synchronic derivational system a virtual form **orxt-*, realized as *ort-* since the cluster *-rxt-* was not permitted in Common Celtic. But elsewhere in the Celtic verb the morphophonemic process *-g-t-* → *-xt-*, thenceforth associated with the *t*-preterite (*t*-aorist), could be realized, as in *reg-* → *rext-*. This formation of an aorist by means of the process *-g-* → *-xt-* was then gradually introduced into the system, wherever it was commanded by the structure of the individual lexeme. In the case of *ag-* → *axt-*, which is Common Celtic (OIr. *-acht* = W *aeth*), we probably have to deal with a very early transfer from the *-to-* participle of an intransitive base *ag-* 'go', with the functional context

as discussed in *Ériu* 19.25 ff. That this transformation took place in this verb was probably conditioned by the fact that the root **ag-* formed no aorist at all in Indo-European; the form in *-t-* filled out the system of the verb.

It should be noted that in *orgid* we have the only case in the Celtic verbal system of an earlier category, the *s*-aorist, 'splitting' into two separate formal and functional categories, the later *s*-subjunctive and *t*-preterite. We had an original paradigm (conjunct singular) of the following morphophonemic configuration: **org-s-ū *org-s-ī *org-s-t*. The regular phonological result was **orsū *orsī *ort* with zero-ending: a skew paradigm. From the 3 sg. a new *t*-aorist paradigm was created for the other two persons, while for the *s*-paradigm **orsū *orsī* a new 3 sg. with zero-ending (as elsewhere in the system) was created for the new *s*-subjunctive: **ors-ø*. Subsequently, *-rs-* was assimilated to *-rr-*, but this did not affect the unity of the paradigm. One may juxtapose the two paradigms, *s*-subjunctive and *t*-aorist; the analogically created forms are set in brackets, and the complementarity is evident.

subj. sg. 1	<i>orrū</i>	aor. [<i>ortū</i>]
2	<i>orri</i>	[<i>ortī</i>]
3	[<i>orr</i>]	<i>ort</i> .

The Celtic *t*-preterite, then, primarily on the evidence of its distribution, can only be explained historically as a sigmatic aorist; in other words, we must assume the previous existence of a suffix morpheme **-s-* which has itself in this formation vanished without trace.

§ 14. THE *s*-PRETERITE.

THE *s*-preterite is the one unlimitedly productive preterital category in all the older Celtic languages. In Old Irish it is formed by all weak verbs (with *a-* and *i*-presents); in Early Welsh, which shows a more advanced stage of linguistic development, it has practically ousted all the original strong preterites in the system. The state of affairs reflected in Early Welsh is characteristic of later Irish;

we may observe in the history of the Middle and Modern Irish verb the gradual expansion of the *s*-preterite at the expense of all others.¹

In Old Irish we distinguish two types of the *s*-preterite, corresponding to the *a*-presents and the *i*-presents. I give below the conjunct paradigms of the preterites of *móraid* 'magnifies' (*a*-verb) and *léicid* 'leaves' (*i*-verb):

-mórus	-mórsam	-léicius	-léicsem
-mórais	-mórsaid	-léicis	-léicsid
-mór	-mórsat	-léic	-léicset.

Descriptively in Old Irish these two are identical; the only distinction is that the stem of the *a*-verbs ends in a neutral consonant, whereas that of the *i*-verbs ends in a palatalized consonant. Phonemically, the two paradigms in the singular are as follows:

/mo:ras ^u /	/L'e:g'as ^u /
/mo:ras'/	/L'e:g'as'/
/mo:r/	/L'e:g'/

The only departure from the inflexional pattern above is in the 3 sg. of the *i*-verb preterite, where some verbs, instead of showing a zero ending as in *-leic*, show a final vowel *i*: *-creti* 'believed', *ad-roilli* 'deserved'. This ending tended

¹ The endings of the plural are in Modern Irish those of the reduplicated and *t*-preterite; we have seen in chapter 13 that these deponent endings spread first to the reduplicated (and long vowel) preterite, and from there to the *t*-preterite already in the pre-Old Irish period, where they replaced the original endings of the *s*-aorist. The subsequent spread of these endings to the *s*-preterite is simply another step in the same linguistic trend.

² This is the traditional interpretation of the Old Irish consonant phonemes, which assumes a three-fold contrast plain: palatalized: (labio-) velarized ('*u*-coloured'). It is quite possible, however, that only a two-fold contrast plain (with velarized allophones): palatalized existed, as in all modern Irish dialects, and that the distinction in the *u*-colouring situation was carried by the vowel. In this case we would recognize at least two vowel phonemes, /a/ and /u/, in unstressed position, where /a/ would have allophones centered around [ə] in plain environment, and [i] in palatalized environment. In this case we would rewrite the 1 sg. forms as /mo:rus/, /L'eg'us/. On the whole, however, an analysis in terms of incompletely specified morphemes is preferable, as in M. Halle's *Sound Pattern of Russian* ('s-Gravenhage, 1959). On this problem in Irish see now D. Greene, 'The colouring of consonants in Old Irish', *Summaries of Papers, Fourth Int. Cong. of Phonetic Sciences* (Helsinki, 1961).

to spread, in limited fashion, during the late Old Irish period; cf. *OIGr.* 419-20. But it never replaced the zero ending as the basic type.

Reconstructing back from Old Irish, the proximate form of the stem of the *s*-preterite is *-ss-* (single *-s-* is lost between vowels), preceded by a low vowel in the case of the *a*-verbs, and a high vowel in the case of the *i*-verbs. The vowel in both cases was originally short, where the 3 sg. preterite has the zero ending; where the *i*-verb preterite has the 3 sg. *-i*, the vowel before *-ss-* was originally long. From the evidence of Old Irish alone, then, we may posit stems *-ass-*, *-i/ess-*, and *-īss-*. The blurring of vocalic contrasts in unstressed position in Old Irish does not permit any more precision as to the vowel in *-i/ess-*.

In Brittonic the different accentuational pattern preserved the vowel before *-ss-* intact, and we can therefore specify the various vowels historically. In Middle Welsh we may distinguish four types, which appear clearly in the 3 sg.: *-as* (*caras* 'he loved'), *-es* (*colles* 'he lost'), *-is* (*erchis* 'he besought'), *-wys* (*cyscwys* 'he slept'). I give the paradigm of *caru* 'love':

<i>cereis</i>	<i>carassam</i>
<i>cereist</i>	<i>carassawch</i>
<i>caras</i>	<i>carassant.</i>

To these four preterital types correspond the preterite passives *-at*, *-et*, *-it*, *-wyt*, which like the Old Irish preterite passive, continue an Indo-European nominal form in *-to-*. The Common Celtic forms of the preterite passive would then be regularly **-ato-*, **-eto-*, **-īto-*, **-ēto-*. In the preterite active, we would have the Common Celtic forms **-ass-*, **-ess-*, **-īss-*, **-ēss-*. The Old Irish form which was given as *-i/ess-* may thus be specified as **-ess-*. The first three of the Welsh forms correspond exactly to the three Old Irish types; for **-ēss-* (W *-wys*) we have nothing comparable in Old Irish.

There are traces of an absolute ending 3 sg. *-sit* in Early Brittonic as well: MW *kewssit* 'got', *prynessid* 'bought', *delyessid* 'held', OBret. *tinsit* gl. *sparsit*, *toreusit* gl. *atriuit*.

This is the same ending as the absolute 3 sg. present *-it* in OW *prinit* 'buys', *agit, egit* 'goes'; it represents the Indo-European thematic primary ending **-eti*, suffixed to **-ss-*, OW *-s-it*. This is simply a case of the further extension of thematization to the *s*-preterite in the Brittonic dialects. In Brittonic the athematic primary ending *-ti* was preserved as well, but in the function of a conjunct, not an absolute ending; W *-as* < **-asti*, whereas **-ast* would have disappeared.

To my knowledge all Celtic scholars agree that this formation continues the Indo-European sigmatic aorist; they differ only in the details of the development envisaged. These are all vocalic stems: taken together with the *TET*- and *TER*- roots they complete the pattern of the distribution of the *s*-aorist in terms of root structure. The morphs **-ass-*, **-ess-*, **-īss-*, *-ēss-* all share the common feature of *-ss-*, while differing in stem vowel, hence it is likely that a unitary explanation of the *-ss-* will be valid for all of them.

Vendryes (*RC* 42.389) has suggested that this *-ss-* is due to expressive gemination. But so long as we can see no functional reason for such a phenomenon, nor any phonological circumstances favourable to it, to invoke 'gemination' remains only a displacement of the problem. 'Gemination' is a descriptive statement, not a historical explanation. It was Thurneysen who saw the correct solution, though he put it forward with unnecessary diffidence (*OIGr.* 417): 'perhaps final *-st* in the 3 sg. had become *ss* at an early period in Celtic, and from thence *ss* spread to all the other forms in place of *s* (cp. the *t*-preterite).' His comparison with the *t*-preterite is exact; it is another example of the same process. The *s*-subjunctive as well illustrates the development. This is the recreation of a paradigm on the model of the 3 sg., after the constitution of a zero-ending in that person. In the case of the *s*-preterite we have the following stages, in morphophonemic terms:

I	sg.1 - <i>V-s-ū</i>	pl. - <i>V-s-omo</i>
	2 - <i>V-s-ī</i>	- <i>V-s-ete</i>
	3 - <i>V-s-t</i>	- <i>V-s-ont</i> .

The phonological change $-Vst > -Vss$ caused the constitution of a zero-ending in the 3 sg., hence

II	$-V-s-\tilde{u}$	$-V-s-omo$
	$-V-s-\tilde{i}$	$-V-s-ete$
	$-V-ss-\emptyset$	$-V-s-ont$

and with the generalization of $-ss-$ replacing $-s-$, the re-establishment of a unified and stable paradigm:

III	$-V-ss-\tilde{u}$	$-V-ss-omo$
	$-V-ss-\tilde{i}$	$-V-ss-ete$
	$-V-ss-\emptyset$	$-V-ss-ont.$

That ss replaced s in this case is only a coincidence; functionally speaking there is no gemination. In the case of the t -preterite it was $-t-$ which replaced $-s-$, e.g., 1-2 sg. $-Rs\tilde{u} -Rs\tilde{i} \rightarrow -Rt\tilde{u} -Rt\tilde{i}$ after 3 sg. $-Rt$, but the phenomenon is identical. Likewise in the Sanskrit precativ, $-s-$ replaced zero; 1 sg. $-y\tilde{a}-m \rightarrow -y\tilde{a}s-am$ after 3 sg. $-y\tilde{a}s$. It is the form of the 3 sg. which will determine the rest of the paradigm in an analogical transformation; we may state this as a law. This analogical transformation in turn is a consequence of the constitution of a zero ending in the 3 sg., itself a general linguistic phenomenon.

There remain to be accounted for only the stem vowels $-a-$, $-e-$, $-\tilde{i}-$, $-\tilde{e}-$ before the ss . We know that the constitution of a complete paradigm of derived verbs was not accomplished in Proto-Indo-European; the development of aorists to denominative and other secondary vocalic stems is a phenomenon of the individual dialects. Hence we must expect a certain amount of diversity from one language to the next, both within Celtic and farther afield.

The stem vowels $-e-$ and $-\tilde{i}-$ present no serious difficulties. Pokorný had devoted two studies to this problem: 'Zur Stammbildung der irischen Kausativa' (*KZ* 49.74-83 [1919]) and 'Zum indogermanischen Kausativum' (*KZ* 60.253 [1933]). He concludes that the causative (-iterative) suffix $-eyo-$ represents $-e-yo-$, and that it is this $-e-$ which appears before $-s(s)$ in the aorist and $-to-$ in the passive. Whether or not we accept his view of a Celtic 3 sg. $*-eyeti >$

*-ēti as against Meillet's view³ that -ī- is primary, it is clear that the -e- of *-ess-, *-eto- must represent the Indo-European thematic vowel. The -ī- of -īss-, -īto- admits of several possibilities. In the first place it could be equated with the -ī- of the Slavic 'half-thematic' verbs,⁴ as in OCS *molitŭ moliti*; but in certain cases it is clear that it goes back to Indo-European -ē-. Examples are -creti 'believed' < IE *kred-dhē-, *as-roilli* < IE *slē-, and it is possible that a few forms such as these served as model for the whole type in *-īss-, *-īto-, and that it is unnecessary to invoke the somewhat distant comparison with Slavic. It is only in Brittonic that *-īss-, *-īto- was very much developed.

The form *-ēss-, *-ēto- is found only in Brittonic. In Middle Welsh, -wys is a highly productive form, particularly in the passive -wyt with its variant -pwyt. It is therefore likely to be a late development. Common Celtic *-ēss-, *-ēto- must go back to an earlier *-eis-, *eito-; to assume that -ē- here continues Indo-European *-ē-, as does Pedersen (VKG 1.55), is contradicted by the development of IE -ē-ss- to -īss- which we have seen above. A morph -ei- is unlikely to be inherited from Indo-European; there are no comparable units attested in other languages. The explanation is probably to be sought in a process similar to the spread of -ī- from roots -dī-, slī- IE *dhē-, *slē- (OIr. -creti, *as-roilli* above). In this case the verbal root would have had such a shape as *Tei-*; an example would be the verbal base *skei- which I have posited as the prototype of OIr. *scēid* 'vomits'.⁵

The most interesting of all of these is however the form -ass-. For there is no way of identifying the long -ā- of the present stem with the short -a- of the preterite; they must be of separate origin. There is only one plausible source in Indo-European for a short *a* in this position in Celtic: a laryngeal. As we have seen in the preceding

³ *Les dialectes indo-européens* 109-13; in itself a more probable position.

⁴ See Stang, *Das slavische und baltische Verbum* 23 ff.

⁵ *Ériu* 18.97 (1958).

section, a set root of the structure *TERH-* suffixed by *-s-* would yield Celtic *TERas-*, 3 sg. *TERast* > *TERass*. The suffix *-ass-* was extracted from the Indo-European set roots, the only place in the verb where such a form in *-a-* could have arisen. The Celtic *-ass-* aorist is thus identical in etymology and formation with the Sanskrit *-iṣ-* aorist, as well as such Greek aorists as *ἐπέρασσα* to set root **perH-* in *πέρνημι* 'sell'. It represents simply the sigmatic aorist suffixed to a laryngeal base, and a new morpheme division *TER-as-* (or *TER-Hs-*) replacing *TERa-s-* (or *TERH-s-*). From Indo-European Celtic inherited roots *TER-* and *TERH-*; suffixed by *-s-* the 3 sg. forms were *TER-s-t* and *TERH-s-t*. The regular phonological result of these in Common Celtic was 3 sg. forms *TER-t-ø* and *TER-ass-ø*, with the morpheme division as indicated.

The strong verbs of the structure *TER-*, i.e., those in Celtic which did not form a present in *-ā-*, but did form a subjunctive in *-ā-*, then generalized the *t*-formation in the preterite, irrespective of whether the root was in Indo-European set or anit, *TER-* or *TERH-*. Thus we have *-sert* from *sterH-*, just like *-bert* from *bher-*.

But the new preterite suffix *-ass-* was generalized in the weak verbs, by all verbs which formed a present in *-ā-*. The channel was furnished by those set roots which formed an athematic present in early Common Celtic (in contrast to the nasal infix or *-yo-* type), which developed a present of the productive weak type in *-ā-*. For the history of these forms see the second appendix. Just as in Latin, where the *-u-* of the productive ('weak') perfectum *-āuī*, *-iui* owes its origin to the model of a very small number of verbal roots in final laryngeal *-A^w* such as *strāuī*,⁶ so in Celtic it was a relatively few laryngeal roots which furnished the characteristic shape of the regular and productive preterite.

⁶ Cf. A. Martinet, 'Non-apophonic *o*-vocalism in Indo-European', *Word* 9.253-67 (1953), and my remarks in *Evidence for Laryngeal* 188.

Appendix

§ 15. MORPHOLOGICAL REFLEXES OF LARYNGEAL IN CELTIC :

THE NOUN

WE have seen in the chapter on the *t*-preterite above that where we have two competing allomorphs, one simple and the other compound, such as *-t-* and *-at-* (= *-a-* + *-t-*), any analogical levelling will be in favour of the more characterized, complex variant *-at-*, in accord with Kuryłowicz's first law of analogy.¹ In the case discussed, this is equivalent to saying that given an anit reflex *TER-t-* and a set reflex *TER-at-* < *TERH-t-*, it is the set reflex which will prevail, and the result will be the morphological replacement *TER-t-* → *TER-at-*.

There are two aspects of this morphological transformation which should be emphasized. The first is that the set reflex *-at-*, originally proper only to roots in final laryngeal, has thus exceeded its etymological bounds. The second, and the more significant, is that the laryngeal reflex proper (*-a-*), has ceased to be a component of the root, and become a component of the suffix. We have a transposition of the morpheme boundary. The sequence is thus *TERH-t-* → *TERa-t-* → *TER-at-*. The situation most favourable to this transposition is one in which the root shows allomorphs with and without the final element, such as *-H* (or *-a*) in the case at hand. This situation we have clearly in laryngeal roots. For while the reflex of *TERH-* before consonantal suffix is *TERa-t-*, the reflex of *TERH-* before vocalic suffix is *TER-o-* with loss of *H*. The result is allomorphs *TER-*, *TERa-*. Hence the contrast of

<i>TER-o-</i>	>	<i>TER-o-</i>
<i>TER-t-</i>	>	<i>TER-t-</i>

with

<i>TERH-o-</i>	>	<i>TER-o-</i>
<i>TERH-t-</i>	>	<i>TERa-t-</i>

will impose a new morpheme division *TER-at-*.

¹ 'Un morphème bipartite tend à s'assimiler un morphème isofonctionnel consistant uniquement en un des deux éléments, c.-à-d. le morphème composé remplace le morphème simple.' In this case (*TER*)-*at-* is the 'morphème à implication' (of *-a-*) = 'morphème composé' and (*TER*)-*t* 'le même morphème sans implication' = 'morphème simple'.

At this point we have competing suffix morphs *-at-* and *-t-*, and Kurylowicz's first law applies: *-at-* will replace *-t-* as the productive suffix.

It should be emphasized that this is a general law about the transformation of suffixes in languages of this type of morphological structure; it has nothing to do with laryngeal theory. One need think only of the identical development in the sequence illustrated by Lat. *Sullānī*—*Mariānī*—*Christiānī*, where the suffix *-no-* is expanded to *-āno-*, and *-āno-* in turn to *-iāno-*, each time by incorporation of a root-final element, *-ā-* of the type *Sulla*, *-i-* of the type *Marius*. These examples also make it clear that the 'root' need not be a root in the Indo-European sense; *root* and *suffix* are hence definable simply in terms of the first immediate constituent cut. The root itself may admit further segmentation, but this is not relevant.

The assumption that the reflex proper to full grade root and final laryngeal would have been generalized in Celtic to all the verbs in a resonant, *TER-*, as well as *TERH-*, is not based on theory alone. We have at least one such category in Celtic where the root appears in full grade *TER(H)-*, and the laryngeal (as *a*) has been generalized and incorporated into the suffix. The formation is nominal, not verbal: the reflex of IE **-mon-* as in Gk. ἡγεμὼν 'leader': ἡγεῖσθαι.

This suffix is no longer productive even in archaic Old Irish, but it did apparently have a period of productivity in Primitive Irish (or late Proto-Goidelic) in the form **-iamon-* (OIr. nom. sg. *-em*) as an agent noun suffix added principally to nominal stems: *brithem* 'judge' < *breth* 'judgement', *dáilem* 'cupbearer' < *dál* 'dispensing'.² The older and unproductive form of the suffix in Celtic is **-amon-*, still preserved in a few Old Irish forms of which the clearest is *medam*

² See *OIGr.* 172. The reconstruction **-iamon-* is originally Pedersen's (VKG 2.61), and was supported by Meyer, *Zur keltischen Wortkunde* IV § 59 (SbPAW 1913, 49, p. 950), who called attention to the ogam gen. sg. ULATIAMI (*o*-stem), and to the nom. sg. *foidiam* 'messenger' in the archaic Amra Coluim Chille § 15 (*RC* 20.162 [1899] = LU 596). Marstrander (*RC* 36.372–6 [1916]) extended these observations, distinguishing *-iamon-* from *-iamo-* and in particular showing that the absence of syncope in the Old Irish reflexes of the older variant *-amon-* is due to the analogical influence of the younger *-iamon-*, where trisyllabic gen. sg. *britheman* is regularly syncopeated from **brithiamon*. This is to be expected. The result of the formal differentiation *-amon-* ~ *-iamon-* is that *-iamon-* has become the 'forme de fondation', and *-amon-* the 'forme fondée', thus liable to analogical transformation. Thurneysen subsequently (*ZCP* 14.4–5 [1923]) discussed the 3 sg. pass. ending (*ég*)-*thiar* of the Amra Coluim Chille, with the same *-ia-* as in *foidiam*, demonstrating its spread as a characteristic of Irish 'rhetorics', and accepting the view that it originally denoted dissyllabic *ia*. (*OIGr.* 64 is not clear in this matter.) The relevance of *foidiam*, *égthiar*, etc., for the dating of syncope in Irish has not been sufficiently brought out.

'jurist' < **med-amon* : *midithir* 'judges'.³ The initial *i* of **iamon*- is clearly to be explained as extracted from the *i*-stems which served as base nouns for this class : *dúlem* 'creator' < *dúil* 'creature', *flaithem* 'ruler, lord' < *flaith* 'lordship', with prototypes **dúli-amon*-, **wlati-amon*-, and a subsequent morpheme division **dúl-iamon*-, etc. The process is identical with that discussed above, and the replacement of **-amon*- by **-iamon*- as the productive suffix is predictable. We have one clear example which illustrates the channel for the replacement of *-amon*- by *-iamon*-, from a purely verbal base. The form is *airem* 'ploughman', which is derived directly from the *yo/i*-stem verb *airid* 'ploughs' : **ari-amon*-. The suffix is clearly in origin the simple form *-amon*-, but the later morphophonemic segmentation was **ar-iamon*-.

The *-a*- of **-amon*- however cannot be explained as an old nominal stem final, which in any case would be exceptional from the Indo-European point of view : *-mon*- is a primary suffix, added directly to the root, which is normally in full grade. The origin of the *-a*- in **-amon*- lies in those cases where *-mon*- was suffixed to a laryngeal root of the structure *TERH*- ; IE *TERH-mon*- yields regularly in Celtic *TERa-mon*-.⁴ The type is exactly that of Gk. *τελαμών* 'strap (supporter)', Greek showing the same phonetic treatment of this complex as Celtic.

We have in fact preserved in Celtic one such form from laryngeal base *TERH*-, with the suffix **-mon*-. The form is **ana-mon*- 'soul', IE **HenH-mon*-, seen most clearly in Co. *enef*, MBr. *eneff* 'id.' < nom. sg. **anamī* < **anamū*. The Irish cognate *ainimm*, *anaimm* has been hopelessly confused with the borrowing from Lat. *anima*.

As noted above, in such cases as that just cited, where *-mon*- was suffixed to a root *TERH*-, the result in Celtic was *TERa-mon*-. Since in Celtic as elsewhere a root *TERH*- in other positions, e.g., before vocalic ending, would give simply *TER-o*- with the complete loss of the laryngeal, the morpheme division appeared as *TER-amon*-,

³ *Ollam*, 'chief poet, ollave' from classical Old Irish *oll*, which Marstrander (*op. cit.* 373) puts in this group, is better taken as the superlative of *oll*, with declensional hypostasis, in view of its meaning 'supreme' in archaic legal passages, as now shown by D. A. Binchy, *Ériu* 18.48-50 (1958).

⁴ Compare *do-cer* 'he fell' < **kerat* < **kerHt* ; *arathar* 'plough' < **aratro*- < **H₂erH-tro*-, cf. Lith. *árklas* with acute accent ; and 'breath' < **anatlo*- < **H₂enH-tlo*-, cf. Skt. *ániti*. For other examples see further below. While this treatment is nowhere clearly stated in Lewis-Pedersen, Thurneysen, or Jackson either in the context of IE *ə* or the laryngeal theory, and must be inferred from the treatment of IE *a*, it is a mark of the pioneering nature of Pedersen's *VKG* that his discussion in 1909 of 'präidg. g' (1.177-81) remains to a striking extent a valid analysis of the treatment of laryngeal in Celtic. For further discussion of this reflex of laryngeal in Celtic, Italic, Greek, and Armenian see Kuryłowicz, *Apophonie* 166 ff.

with *-amon-* suffixed to a root *TER-*. The newly constituted suffix *-amon-* could then be freely added to an anit root *TER-*, and eventually to a root *TET-*, as in OIr. *medam* < **med-amon-*. We have a similar development in Sanskrit with the same suffix *-man-* where the original and etymological alternation *jāniman-* ~ *dhārman-* (**genH-* ~ **dher-*, *TERH-* ~ *TER-*) has been largely obscured by the spread of the set form *-iman-* (*dhārīman-*), with analogical long *i*.⁵

Another example of the *TET-* type is **seg-amon-*, from IE **-segh-*, Skt. *sahate*, Gaul. *sego-* Goth. *sigis*, attested as personal or divine name in two ogam inscriptions in the genitive singular form *SEGAMONAS* (Macalister, *C. I. I. C.* nos. 263, 300) and perhaps also in the Gallo-Latin divine name *Segomo*, an epithet of Mars attested in five Latin inscriptions; but the latter may also be interpreted as a hypocoristic form from the compound *Sego-marus*, of the type seen in the local name *Blātomum* beside *Blāto-magus* 'Flower field'.

Pokorny⁶ regards the ogam form *SEGAMONAS* as Gaulish in origin, giving 'testimony of a late settlement of Gaulish immigrants', which if correct—both inscriptions are from the same barony in Co. Waterford—would suggest the Gaulish form of the divinity was **Segamii*. The epithet may also be regarded as purely Irish; *Nia Segamain* is attested *passim* in Middle Irish literature, e.g., *Cóir Anmann* § 26 (ed. Stokes, *IT* iii 2).

A third formation in *-amon-* to *TET-* root is *legam* 'moth' < **leg-*, OIr. *legaid* 'melts, is destroyed', as shown by K. Meyer.⁷ The verb was originally strong, as shown by its nominal derivatives; cf. *For Roman Jakobson* 615.

The process of the generalization of *-amon-* must have taken place relatively early in Celtic, for the second process of the generalization of *-iamon-* from *i*-stems is already completed, and the suffix an unproductive form, in the oldest Irish attested. The generalization of *-amon-* (replacing *-mon-*) must have taken place at a time when the suffix was primary, and built on the verbal root; the shift of Celtic *-amon-* from a primary radical suffix to a secondary denominative one is to be explained by the ambivalence in cases of formal identity of the verbal root with the athematic root noun, and the subsequent replacement of the root noun by further purely nominal derivatives.

The types *TERmon-*, *TERamon-* are built on an unambiguous root, since the athematic root noun in such cases would normally have zero grade; but once the suffix *-amon-* was extracted and freely suffixed to a *TET-* root, then the radical syllable became ambivalent,

⁵ A detailed analysis of the complex development of this Sanskrit suffix may be found in *Apophonie* 261-3, in connection with the Sanskrit *ā* : *i* alternation.

⁶ *Historical reader of Old Irish* 23 (Halle [Salle], 1923).

⁷ *Miscellanea Hibernica* 33 (Urbana, 1916) = *Univ. of Ill. Stud. in Lang. and Lit.*, col. 2, no. 4.

since the root noun had the same form. A good example is **med-amon-* 'judge' above, the verbal root **med-* being identical with the athematic root noun **med-* which appears in Oscan *med-diss*. But in Celtic as in all other Indo-European languages, the root nouns were gradually eliminated by the encroachment of functionally identical, but formally extended and enlarged nouns built on the same root. It is the process of formal replacement of the athematic root noun such as **med-* in nominal function by such purely nominal forms as **wlati-* 'rule; lordship (OIr. *flaith*)', which entailed as a necessary consequence the shift from primary, deverbative suffix in **med-amon-* (*medam*) to secondary, denominative suffix in **wlati-amon-* (*flaithem*).

§ 16. MORPHOLOGICAL REFLEXES OF LARYNGEAL IN CELTIC :

THE VERB

THIS appendix will present a new solution to the problem of the historical analysis of a group of Celtic primary *a*-verbs. It is intended to replace an earlier explanation of some of the same forms, which I advocated some years ago in the article, 'A preliminary history of the Old Irish primary *a*-verbs', *For Roman Jakobson* 613-21. The verbs are the following:

- OIr. *scaraid* 'separates'
- OIr. *anaid* 'rests, remains'
- OIr. **anaid* 'blemishes'¹
- OIr. *maraid* 'remains'
- W *malu* 'grind'
- W *taraw* 'strike'².

To this series we may add finally OIr. *caraid* 'loves', W *caru*, which exhibit the same structure as the others. This verb is not a normal inheritance from Indo-European, but rather a formally grammaticalized borrowing from emotive child language; its history is thus exactly parallel to that of Latin *amāre*. But by virtue of its phonological form it fell together with this class already in Common Celtic times. Compare the participial formation in Gaulish *Caranto-*, as a personal name.

¹ For this verb, found in the text on the privileges and responsibilities of poets printed by E. J. Gwynn, *Ériu* 13.13 ll.5.6 (1940), see my note in *Ériu* 19.116-18 (1962).

² The finite forms of the verb *taraw* are secondary, being built on the verbal noun. They have already in Middle Welsh undergone syncope of the pretonic vowel: 3 sg. subj. *traho* (Laws), impf. *trawei*, pret. *trewis* (Mabinogion) < **taraho*, **tarawei*, **terewis*, as discussed by Pedersen, *VKG* 1.280. The verbal noun itself, however, *taraw* < **tar-ām-*, presupposes a primary *ā*-verb **tarā-* of identical structure with the rest.

All these verbs are primary. Although inflected as denominatives, in the 'weak', productive *a*-class (*OIGr.* A1), they are not derived from any nominal base. Rather, the cognate forms within Celtic, insofar as they exist, show a divergent form, which cannot be explained by any living Irish morphophonemic alteration. Compare these verbs respectively with:

- OIr. *scor* 'unyoking' (masc.)
anál 'breath' (for the meaning cf. *con-osna* 'sighs' <
con-oss-ana)
on 'blemish' (neut.)
 W *taradr* 'auger'.

Outside Celtic we may furthermore contrast *maraid* with Lat. *mora*, and W *malu* with OIr. *melid* 'grinds'.

The fact that these verbs are primary justifies their being treated separately from the rest of the *a*-verbs; they may be defined and delimited as a formal class by their unitary structure (*T*)*aR-ā*-. It is doubtless of significance that these are the only non-denominative verbs in early Celtic which present this particular root structure.

There exists ample evidence that at least five of these verbs are from laryngeal (set) root *TERH-*. We may establish a root etymology, by juxtaposing the Celtic forms and their cognates which exhibit evidence for laryngeal root.

- OIr. *scaraid*: Lith. *skiriù skirti* 'separate' with acute intonation
 OIr. *anaid*: Skt. set present *ániti* 'breathes', Gk. *ἀνέμος*
 OIr. **anaid*: Hom. athematic *ἄνατο*, Gk. *ὄναμαι, ὄνομαι* 'scold'
 W *malu*: Skt. *mrñāti* 'rubs', and the whole accentuational
 agreement Lith. *málti*, Latv. *mālt*, Russ. *molót*, Serb.
mljèti 'grind'
 W. *taraw, taradr*: Gk. *τέρετρον τετραίνω* and Serb. *tr̥ti* 'rub'
 Lith. *tr̥ti* 'examine' with acute.³

With the exception of my own earlier study—which presented a solution according neither with Celtic nor with Indo-European—this establishment of root etymologies is where previous historical studies have been content to stop. But by envisioning the development of these forms in terms of both morphological and phonological transformations, we can arrive at a far more precise view of their history than was heretofore possible. This, in turn, gives us substantially greater information about the original nature of Common Celtic, and gives new insight into the whole problem of the linguistic position of Celtic within the Indo-European group.

In Indo-European, set roots formed only a limited number of kinds of presents; they were usually either athematic (*TERH-ti*)

³ On this family see especially Ernout-Meillet, *Dict. etym. lat.*⁴ s.v. *terō*.

or nasal infix (*TR-n-EH-ti*). Other types may appear in the historical languages, such as *TRH-ye-ti*, but these are generally secondary and later creations. The Celtic forms themselves do not at first sight give evidence for any of these, but they do exclude the nasal infix type.

For two of these verbs we have athematic cognate verbs attested in the historical languages: Skt. *ániti*, and Hom. *ἄνατο* from roots respectively **H₂enH-*, **H₃enH-*. There exists the possibility that all these verbs formed athematic presents in Indo-European, and further that it was from such athematic presents, inherited into Common Celtic, that the forms of these verbs as we have them attested in Old Irish and Early Welsh were developed. This, then, we shall make our hypothesis: that the Celtic verbs continue Indo-European athematic set presents; we shall see how the validity of this hypothesis may be demonstrated by examining the prehistorical development of athematic set presents within Celtic, by the technique of reconstructing forwards in time.

From the Indo-European point of view athematic set presents were merely a subtype of the larger class of athematic root presents of the root structure *TERT-*; the laryngeals in this position were treated simply as any other consonant. As such we should expect for the Indo-European form an apophonic paradigm in the present, with full grade root in the singular, and zero grade in the plural (as well as in the dual and throughout the middle). The accent fell on the root syllable in the singular, and on the endings in the plural. We may assume such paradigms as:

<i>TÉRH-mi</i>	<i>TRH-mé-</i>
<i>TÉRH-si</i>	<i>TRH-té-</i>
<i>TÉRH-ti</i>	<i>TRH-é/ónti</i> ⁴ .

The problem confronting us is to explain how, within the Celtic period, these six or seven Celtic verbs came to acquire the form in which they appear in the historical records.

Reconstructing back from the Irish forms, the farthest we can go is a proximate 3 sg.

**skāratī*
**anāti*
**anāti*
**marāti*
**malāti*
**tarāti.*

But this is nothing like the Indo-European type which we have presupposed, and we have no reason to doubt that reconstruction.

⁴ The precise form of the desinences need not concern us here.

Yet by the technique of reconstructing forwards in time, and by recovering the workings of prehistoric morphophonemic transformations, the solution to the problem of these forms is relatively simple.

We may begin with the Indo-European prototypes, as previously established, save only that we use a reconstruction corresponding to an actual Irish verb, *scaraid* 'separates'. We have the following paradigm:

<i>*skérH-mi</i>	<i>*skrH-mé-</i>
<i>*skérH-si</i>	<i>*skrH-té</i>
<i>*skérH-ti</i>	<i>*skrH-ónti.</i>

The second step is the Proto-Celtic result of this paradigm, by regular and purely phonological transformations. The singular is simple:

<i>*skera-mi</i>
<i>*skera-si</i>
<i>*skera-ti.</i>

But in the plural we have already an ambiguity. The original isolated reflex of *rH* before consonant in Celtic is *rā*. Hence we might expect

1 pl.	<i>*skrā-me-</i>
2 pl.	<i>*skrā-te.</i>

But the reflex of *rH* before vowel is in Celtic *ar*; hence the paradigm must be completed by

3 pl.	<i>*skar-onti</i>
-------	-------------------

which yields a skew paradigm.

The way out of this difficulty has been shown by the recent work of Kuryłowicz (*Apophonie* § 19 ff.) on the form of the zero grade of laryngeal bases. Kuryłowicz has brilliantly demonstrated that in the Southern Indo-European languages—Armenian, Greek, Latin, and Celtic—one must distinguish between a phonetic and a morphological zero grade of laryngeal roots. This morphological zero grade is intimately bound up with the extension of the vowel *a* in these languages. It is not necessary here to go into the precise detail of the demonstration; put as simply as possible, the key to the form of the root lies in the opposition of suffix morphemes with vocalic initial, and suffix morphemes with consonantal initial. In Indo-European we had the following series:

(full grade)		(zero grade)	
<i>terH-o-</i>	<i>terH-to-</i>	<i>trH-o-</i>	<i>trH-to-</i>

where *-o-* = morpheme with vocalic initial, *-to-* = morpheme with consonantal initial. Now in the Southern group of languages, including Celtic, the regular phonological changes in the first three led to the establishment of the proportion

$$ter-o- : tera-to- = tar-o- : tara-to-$$

The new *tara-to-* replaced the older *trā-to-*, wherever there existed a living morphological relation between the full grade and the zero grade. Where this did not exist, in non-motivated forms, the reflex *rā* prevailed.

Turning again to our second paradigm, we can see that the situation in the plural forms here is precisely that most favourable and most conducive to such a morphological replacement. Indeed from Kuryłowicz's point of view, it would be very nearly an ideal example. Within these three forms the third plural **skar-onti* would necessarily act as catalyst leading to the replacement of the phonetic zero grade *rā* by the morphological zero grade *ara* in the first and second plural, thus achieving the paradigm

<i>*skera-mi</i>	<i>*skara-me-</i>
<i>*skera-si</i>	<i>*skara-te-</i>
<i>*skera-ti</i>	<i>*skar-onti.</i>

Within the context of apophonic paradigms, this is a stable situation. But here another factor intervenes. This is a morpho-phonemic transformation proper to Celtic alone, and readily demonstrable at any level of the Proto-Celtic linguistic system. It is the fact that in every paradigm inherited from Indo-European which exhibited a functional alternation between full grade and zero grade, in other words, paradigmatic Ablaut, Celtic has universally generalized the zero-grade. There are no exceptions to this; we may take it as given. The replacement, then, of the Proto-Celtic paradigm as we have seen it (above), by the following paradigm will be automatic:

<i>*skara-mi</i>	<i>*skara-me-</i>
<i>*skara-si</i>	<i>*skara-te-</i>
<i>*skara-ti</i>	<i>*skar-onti.</i>

The final stage of the development of these forms is the replacement, in the present tense, of the isolated, unproductive, fossil morph *-a-* by the common and extremely productive denominative morpheme *-ā-*. In passing from *skarati* to *skarāti* we may perhaps even speak less of a morphemic substitution than of a morphemic assimilation. The resultant paradigm is thus

<i>*skarā-mi</i>	<i>*skarā-me-</i>
<i>*skarā-(i) ⁵</i>	<i>*skarā-te-</i>
<i>*skarā-ti</i>	<i>*skar-onti.</i>

It is identical with the paradigm reconstructible as the immediate prototype of the present of *scaraid* in Old Irish.

⁵ For the original athematic 2 sg. *-si*, an ending of the probable shape *-ī-* was at some point substituted, whence OIr. *scar(a)i*; this substitution may have been quite early in Common Celtic. But the basic structure of the paradigm was unaffected.

We have other cases of the development *-atī* → *-ātī* in Irish, which I have discussed in my original study of the Old Irish primary *a*-verbs, *For Roman Jakobson* 619 ff. These are the verbs from Indo-European monosyllabic roots in long vowel, and the phonologically obscured *-na-* verbs. Of the first group we may take as an example OIr. *íada* 'closes', from IE **e[p]i-dhē-*. The zero grade root form was first generalized, IE **epi-dhə-* Common Celtic **ēda-*; subsequently **ēda-* was replaced by **ēdā-* in conformity with the pattern of the productive denominatives in *-ā-*. The second group may be exemplified by *-ella* 'goes'; Common Celtic **el-na-*, the generalized zero grade form, was assimilated to **ella-*; the consequent loss of relationship with the other verbs in *-na-* resulted in the same shift: **ella-* → **ellā-*, the immediate prototype of Old Irish *-ella*. The replacement in the class **skara-* → **skarā-* is simply another example of the same transformation.

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